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IT Services Opportunities in Customer Care and Billing within Telecommunications Providers - Europe

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IT Services Opportunities in Customer Care and Billing within Telecommunications Providers – Europe

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Abstract

Globalisation, deregulation, the convergence of traditional markets, the emergence of new technologies and new carriers are deepening competitive pressures, forcing innovation and raising standards of customer care in the telecommunications sector. New services such as Cable TV (CATV), internet services and wireless communications, require modern and, above all, flexible business support systems that facilitate:

- Maximum competitive advantage
- Differentiated customer service
- Billing quality and flexibility
- Rapid and effective revenue collection
- Optimum growth in revenues, subscribers and profitability.

Customer care and billing (CC&B) systems are in the vanguard of telecommunications providers efforts to keep pace with industry changes and retain competitive advantage. As customers expect more and more from their suppliers, providers are demanding new approaches to CC&B to seize the market opportunities that arise in this evolving commercial environment.

The objectives of this report are to:

- Analyse current and future CC&B user requirements
- Identify new opportunities for IT services vendors
- Estimate CC&B spending patterns and provide market forecasts
- Detect major CC&B software and service requirements
- Evaluate major vendors' capabilities.

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I

Introduction

A Objectives

Telecommunications is one of the fastest moving industries in the world. Network operators and services providers need leading edge Customer Care and Billing (CC&B) solutions to keep up with market, regulatory, customer and competitive advances.

CC&B is a broad area which can include everything from handling customer inquiries of all types to directory assistance, workforce dispatch, service order processing and billing. It is becoming one of the most important key differentiators for telecommunications operators, driving them to re-evaluate current processes, cost structures and IT infrastructures.

In an era of rising competition and the arrival of new complex technologies, CC&B represents an opportunity for providers to differentiate themselves. These allow them to:

- Attract new customers with specific and adapted offers
- Minimise churn
- Improve profitability

- Enhance the company image
- Be customer-friendly by resolving customer questions and problems as quickly as possible
- Do single bill consolidation and offer bundle billing which promptly implement pricing and rate changes
- Differentiate their service from those of their competitors
- Reduce frauds which currently account for about 3% of operators' total revenues
- Itemise bills
- Collect electronic payments.

This report monitors the major trends and dynamics which are currently in play in the European CC&B marketplace and which will shape the business of telecommunications operators in this strategically important area over the coming years.

Among these major dynamics are:

- The explosive movement towards best-of-breed CC&B solutions
- The delivery of IT services associated with CC&B application software packages
- The subsequent related services of CC&B solutions.

This report comments on these trends within the telecommunications user community, sizes IT users' spending on CC&B related services, analyses CC&B market revenues, and forecasts the likely changes in these issues over the next few years.

B
Scope

This report covers the European CC&B Software and Services market. It provides qualitative and quantitative analysis covering all the service types which are described in detail below.

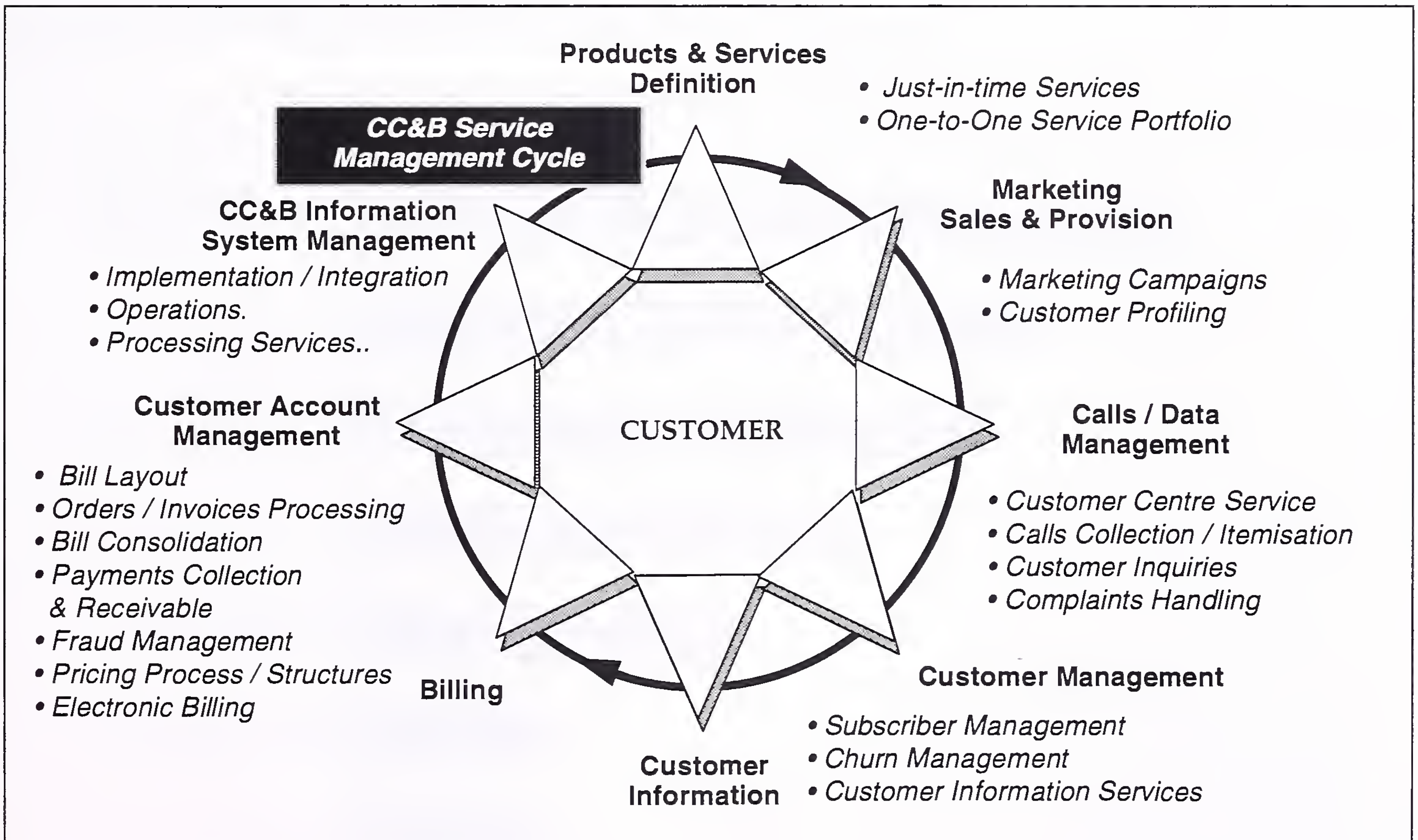
Exhibit I-1 presents the major functions a CC&B system should address:

- Calls and Data Management covers call collection and detailed call analysis

- Customer Management and Customer Information also includes customer care processes handling such as registration, connection, disconnection, enquiries, customer satisfaction evaluation, bulletin boards and mailing.

Exhibit I-1

CC&B Solutions Market Definition



Source: INPUT

- Customer Account Management and Billing includes subscriber bills and statements processing, charges calculation, taxes and discounts as well as credit checking, fraud management and all payments processes received from customers (cash, cheques, bank transfer, electronic payment) and real time rating

- CC&B Information System Management concerns the IT operations part of the solution. It might take into account new implementation processes and interfaces handling with other systems such as the network, legacy systems and finance systems, systems operations, major processing services, etc. It also analyses new technology usage opportunities such as electronic access, Internet implementation, datawarehousing and datamining facilities and workflow management

- Products & Services Definition and Marketing/Sales Provision emphasise telesales, sales tracking, market identification/segmentation, customer profiling, demand forecasting, usage analysis, new products and services design and marketing

- Other services include regulatory processes, security, training, account hierarchies, current account balance, rating, control, adjustments and receivable/journals/reports.

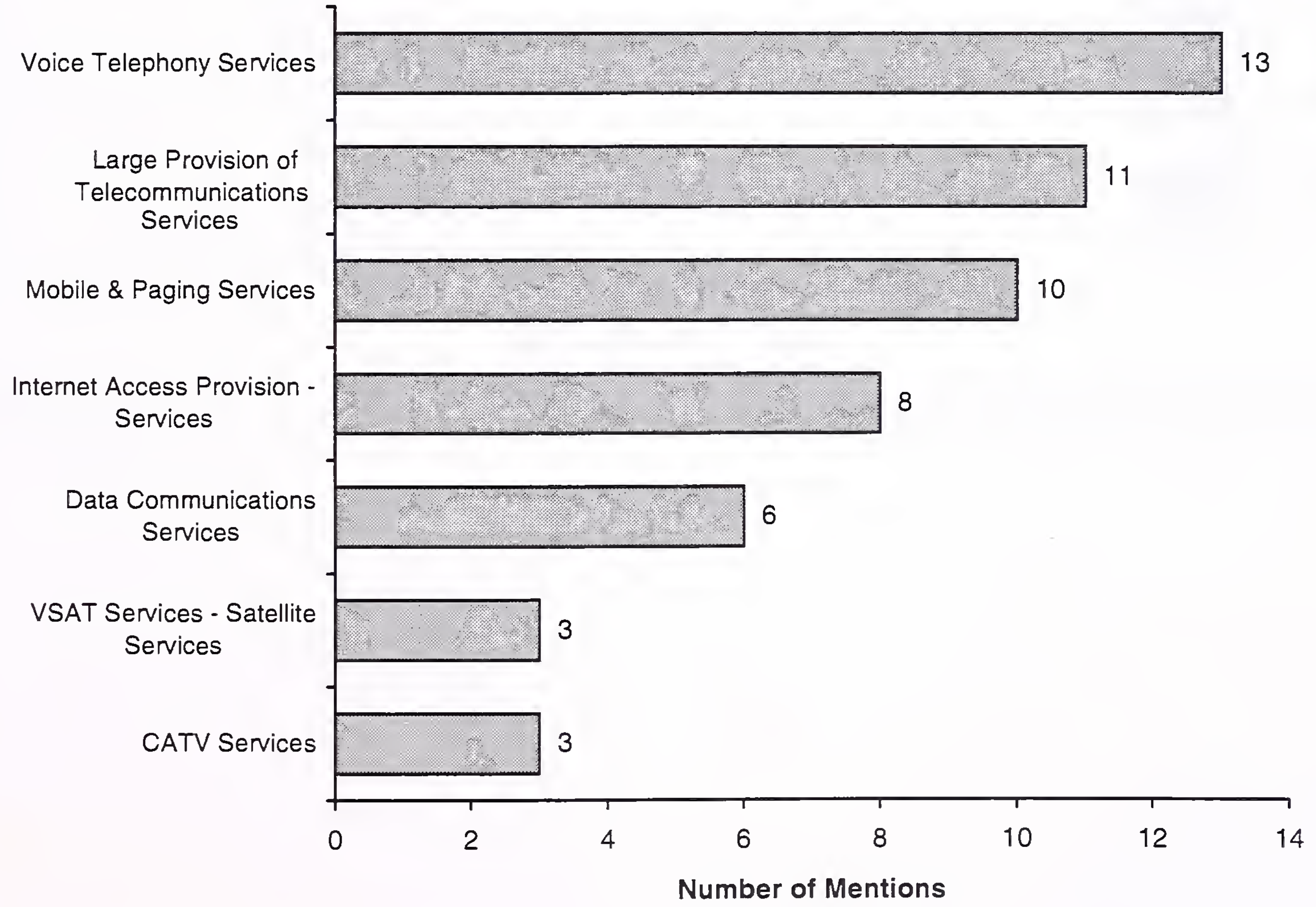
C
Methodology

The research that contributed to this report is derived from the following sources:

- INPUT's continuous tracking and analysis of the computer software and services market
- Information supplied by 20 major European CC&B software and services-based solutions vendors in response to a questionnaire and/or on-site meetings
- In-depth interviews with 38 major telecommunications providers from traditional PTTs to new entrants including alternative providers, CATV operators, Internet Services Providers (ISPs), satellite services providers. Exhibit I-2 shows the breakdown by major services categories.

Exhibit I-2

Sample Breakdown by Major Service Categories 1997

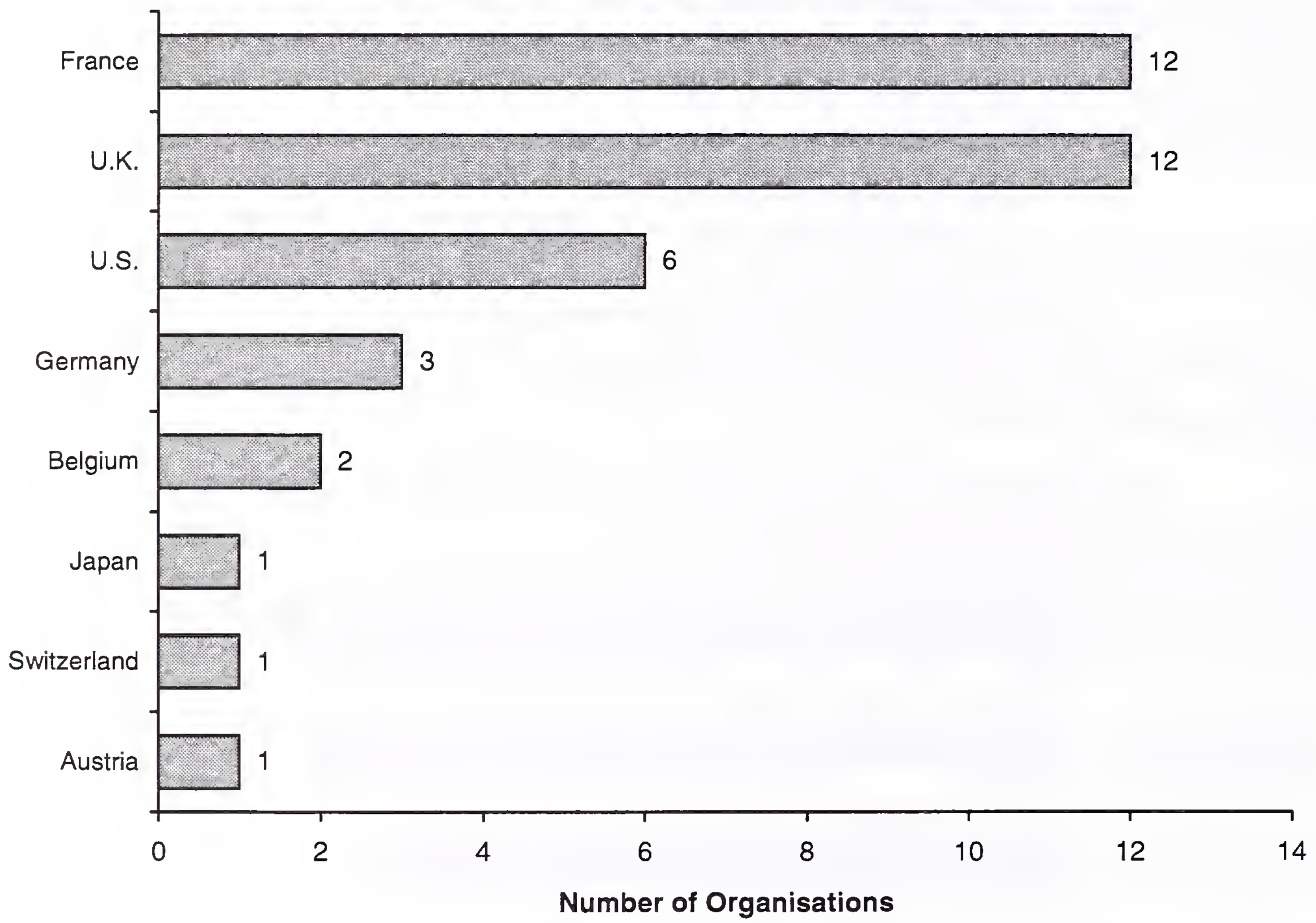


Sample of 38 Telecommunications Providers *Source: INPUT*

Exhibit I-3 and I-4 illustrate the breakdown of the sample by country where the interview took place and major regional markets. INPUT also interviewed U.S. and Japanese providers that might be interested in the European marketplace or have already invested in European providers.

Exhibit I-3

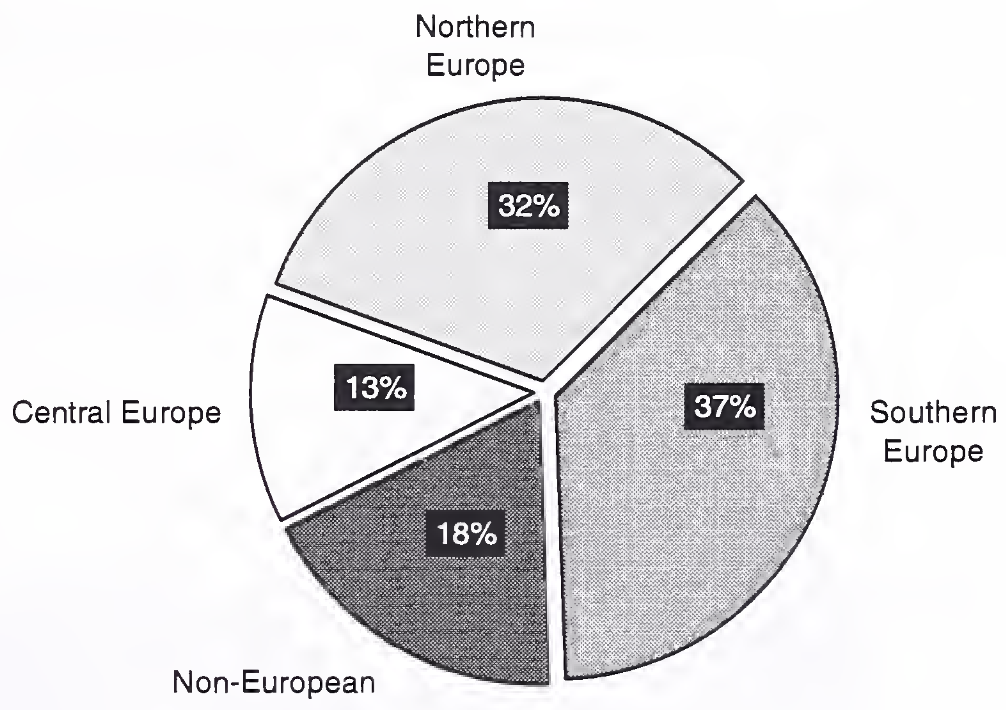
Sample Breakdown by Country 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

Exhibit I-4

Sample Breakdown by Major Regional Markets 1997



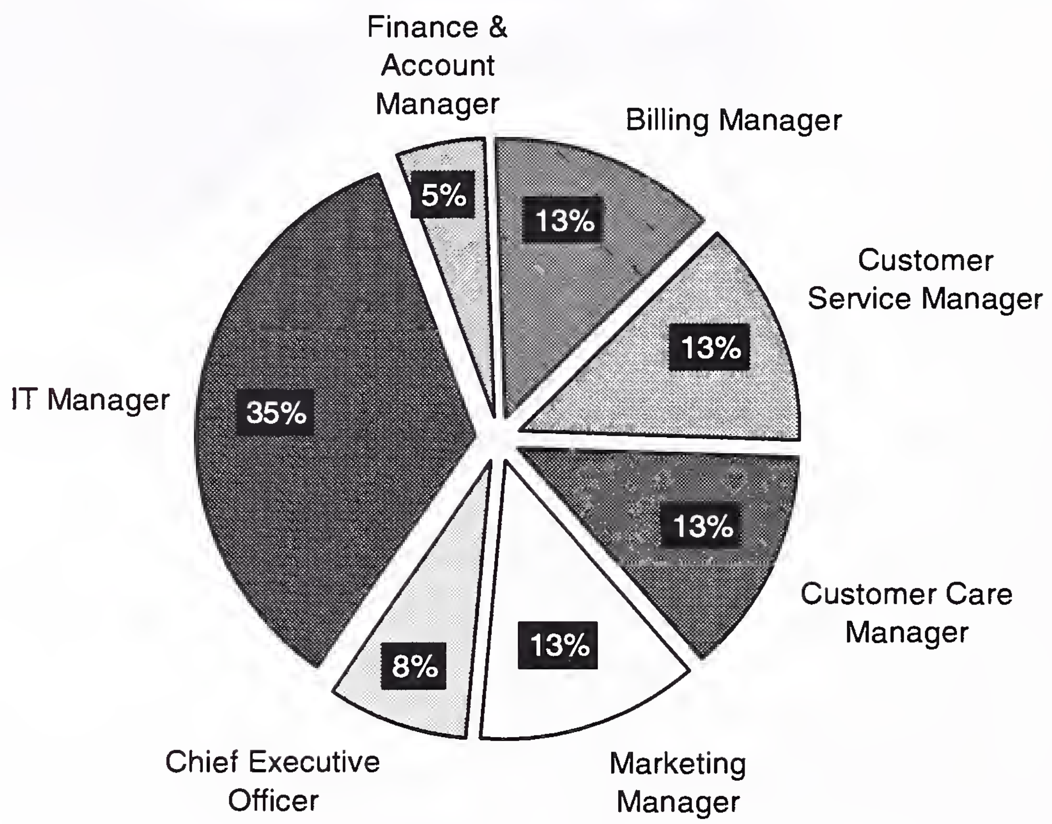
Sample of 38 Telecommunications Providers *Source: INPUT*

Interviews were conducted with both business (marketing managers, customer support managers, etc.) and technology executives (Chief Information Officers, IT managers, etc.).

Exhibit I-5 shows the breakdown of the sample by major functions.

Exhibit I-5

Sample Breakdown by Function 1997

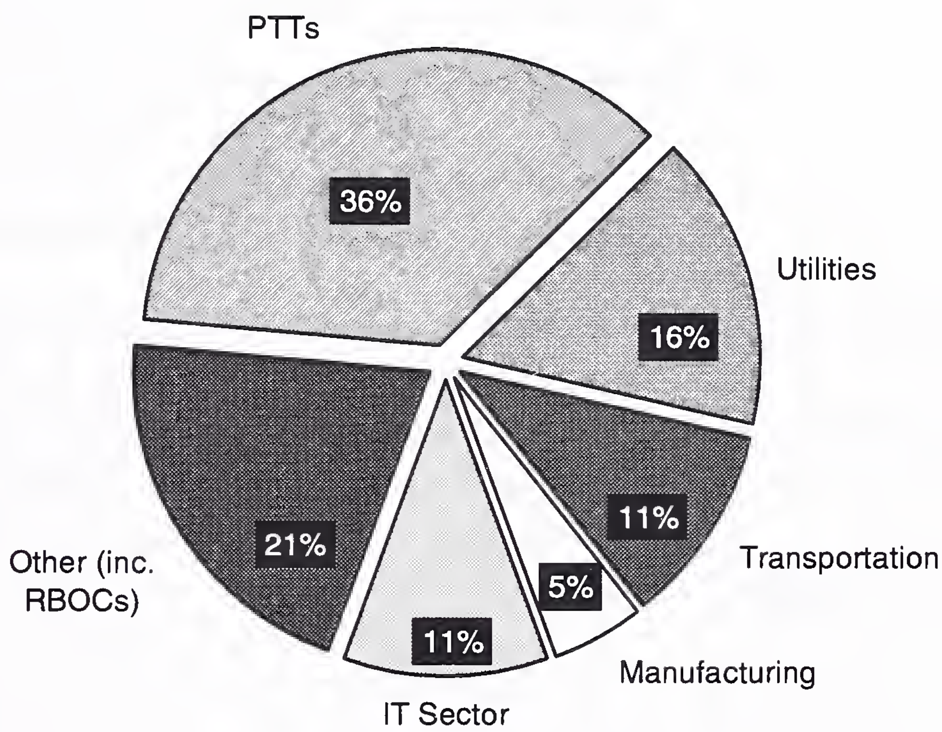


Sample of 38 Telecommunications Providers *Source: INPUT*

Exhibit I-6 presents the business origins of the telecommunications providers interviewed within the research.

Exhibit I-6

Sample Breakdown According to Business Origin of Telecommunications Providers 1997



RBOCs: U.S. Regional Bell Companies
Sample of 38 Telecommunications Providers
Source: INPUT

Note to the reader:
Due to the sensitive topic covered by this report, some operators were reluctant to provide any information. Those who participate asked INPUT a Non Disclosure Agreement (NDA) to protect information related to their CC&B strategies.

D
Report Structure

Chapter I is the introduction to the survey. It includes the table of contents and the list of exhibits.

Chapter II provides an Executive Summary which presents the key findings and recommendations of this study.

Chapter III provides details of the European telecommunications environment. It examines the requirements of European telecommunications providers and discusses the major CC&B applications being developed to support their rapid business growth. The chapter also contains details of users' IT CC&B spending plans and future intentions within major countries and regional markets.

Chapter IV looks at the European CC&B industry (i.e. the supply side of the supply/demand equation). It examines opportunities and challenges for IT vendors, providing an overview of major service types (i.e. Systems Integration, Turnkey Systems, Professional Services, Software Products, Network Services, Operations, Processing Services and Equipment Services). It analyses:

- CC&B applications being developed
- Major technologies being utilised
- Requirements of external IT services vendors
- Leading IT software and services vendors in the CC&B market.

Chapter V supplies regional market analysis for Southern Europe, Central Europe and Northern Europe.

Appendix A contains the questionnaires used in interviewing telecommunications organisations for this report.

Appendix B provides the report index.

Appendix C lists the exchange rate details used for compiling this report.

E

Related Reports

- European Software & Services Market Forecast - Europe, 1996-2001
- Les Enjeux du Help-Desk - France, 1996-2001
  Help-Desk Issues - France, 1996-2001
- Help-Desk Services Opportunities - Europe, 1996
- Business Integration Opportunities in European Telecommunications, 1996
- Vertical Markets Forecasts - Europe, 1995-2000
- Major Forces Shaping the European IT Services Market, 1995
- European Business Integration Market - Competitive Analysis, 1995
- U.S. Information Services Opportunities and Trends - Telecommunications, 1995-2000
- Wireless Telecommunications Marketplace - U.S., 1994

(Blank)

II

Executive Summary

Customer Care and Billing (CC&B) is becoming the most significant function of the telecommunications services providers' information system. Formerly relegated to back office operations, these systems are now moving to the core of operators' information systems as market deregulation forces operators to become more customer-driven.

As competition increases, CC&B solutions will be necessary to help them differentiate their products and services from those of the competition, to improve customer service and to create a positive overall image in a fast moving and often confusing market.

Against this background, recent INPUT research reveals that:

- Telecommunications service providers increasingly perceive CC&B to be more of a marketing challenge than a technical solution
- Operators are investing more than 30% of their IT budget on CC&B
- Deployment of advanced technologies is set to increase CC&B penetration
- Operators should aggressively seek vendors who can offer:
  - CC&B enabling applications solutions
  - consultancy expertise
  - high technology and systems integration capabilities
  - short implementation times.

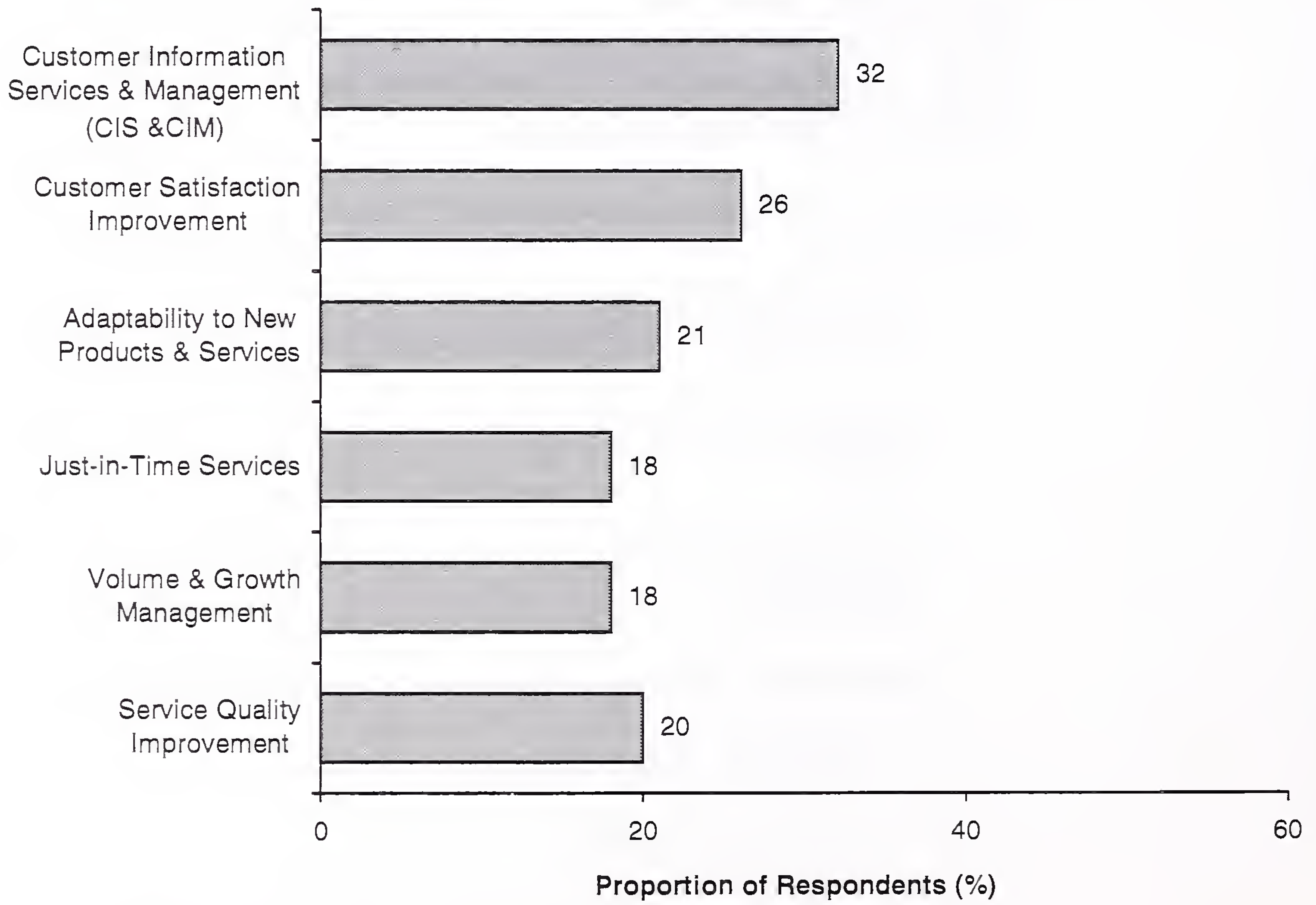
A
CC&B Will Play a Key Role in Increasingly Competitive Market

Managing a growing number of customers will only be part of the challenge facing telecommunication service providers. Increasingly, operators will find that as competition increases, customer retention will determine their success or failure to maintain market share.

In addition, winning new business will be a direct consequence of an operator's ability to design new, attractively priced services which accurately reflect customer requirements. Exhibit II-1 illustrates that, by collecting and efficiently exploiting customer information, CC&B solutions will assist operators to identify customer needs, to market new product and services accordingly and to improve time to market and the quality of customer service.

Exhibit II-1

Major CC&B Challenges Facing European Telecommunications Services Providers by the Year 2000



Sample of 38 Telecommunications Providers *Source: INPUT*

B

Europe's Operators are Investing 30% of their IT Budget on CC&B

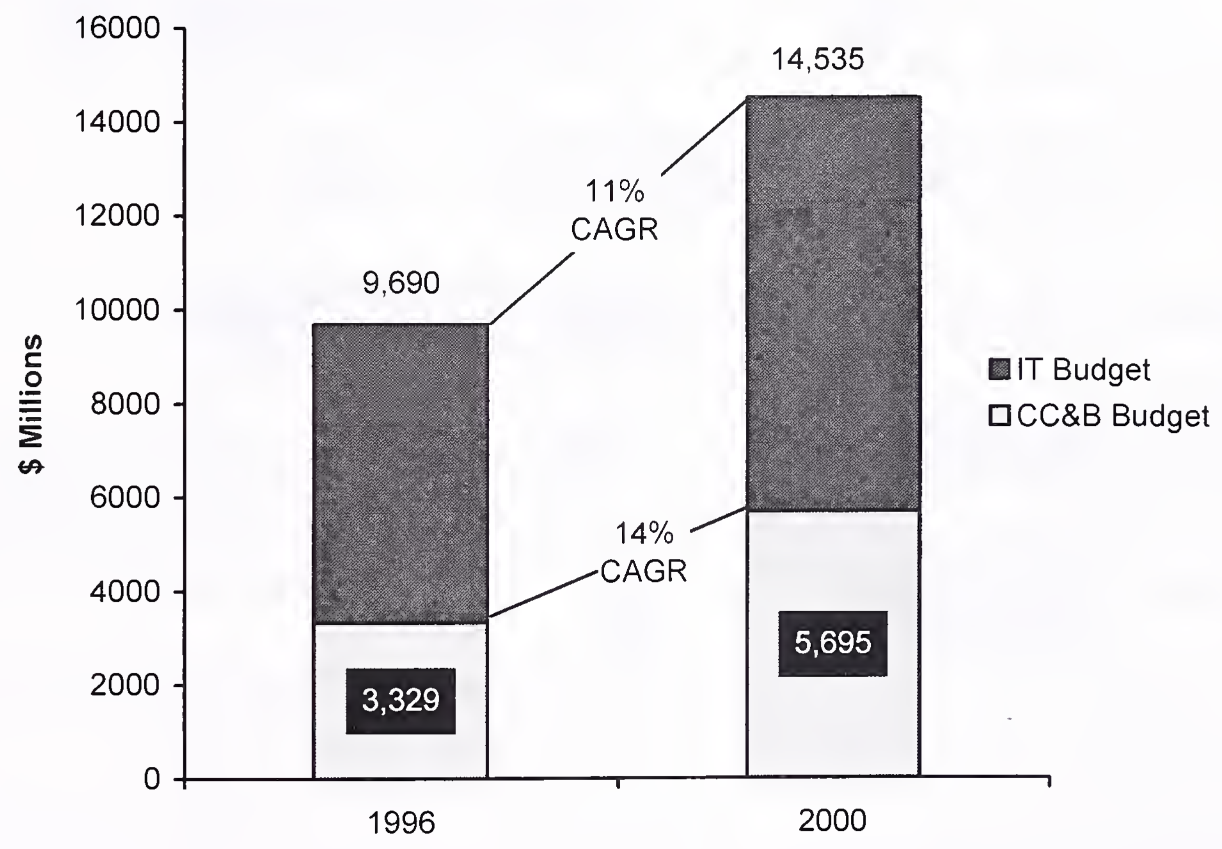
Exhibit II-2 shows that Europe's telecommunications operators will devote more than one-third of their overall IT budget to CC&B solutions over the period 1996-2000.

Southern and Central European markets will experience high growth rates but continue to lag significantly behind the UK where operators continue to heavily invest in CC&B software and systems, even though they have a considerable advance and experience, their market being deregulated since the early 90's.

The newer market entrants, including Internet service providers and wireless operators, are likely to increase their investment the most over the next four years.

Exhibit II-2

Evolution of Telecommunications Sector IT Expenditure - Europe 1996-2000



Source: INPUT

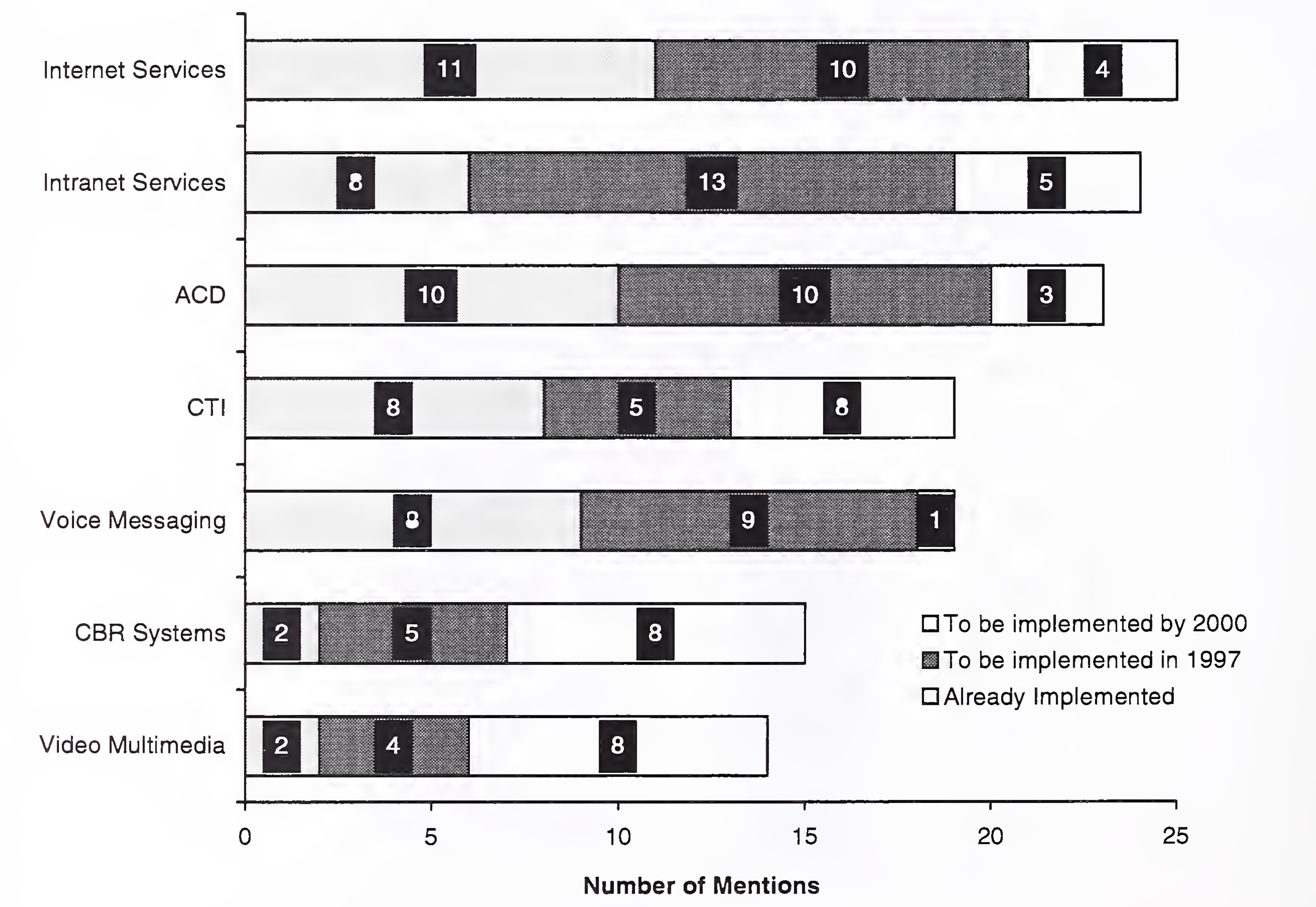
C

Deployment of Advanced Technologies Set to Increase CC&B Penetration

All telecommunications operators see the Internet, and especially Intranets, as an indisputable client interface improvement and, consequently, as a decisive media. Exhibit II-3 illustrates this common appreciation among these organisations.

Exhibit II-3

Future Usage of New Technologies - Short Term European Telecommunications Services Providers'



Sample of 38 Telecommunications Providers

Source: INPUT

For telecommunications services providers targeting the SOHO market and/or the domestic market, call centres will evolve to integrate new technologies such as:

- Internet and ISDN access
- Computer Telephony Interface (CTI)
- Case-Based Reasoning Systems (CBR)
- Voice mail servers, etc.

CTI is going to change the way customers do business, and telecommunications providers have to prepare for it with products that fit the new environment and give real-time solutions to customers' problems. CTI is already recognised as a necessity, especially for handling domestic mass market requirements.

D

Professional Services and Systems Integration Are Critical

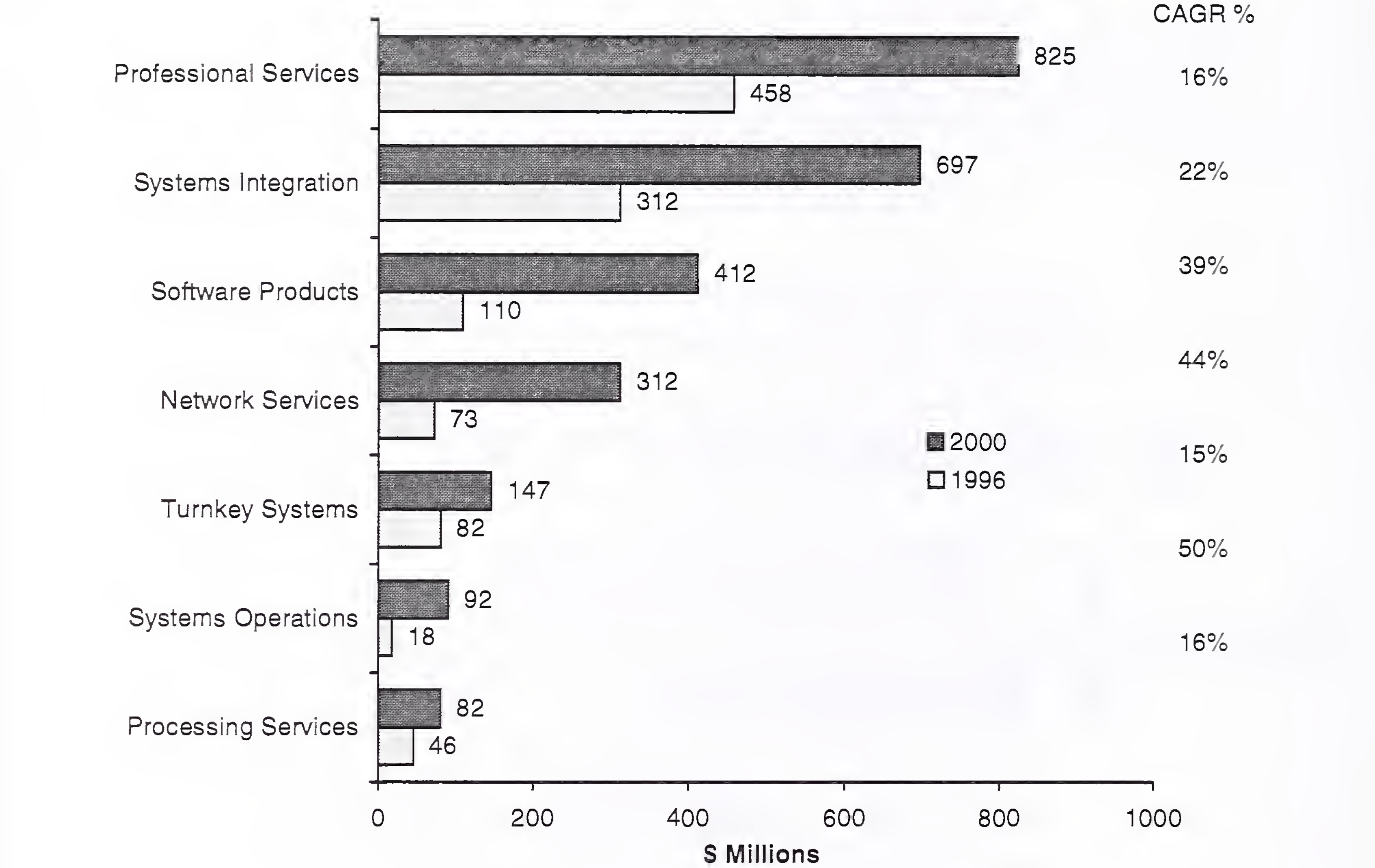
The growing CC&B market provides considerable opportunities for providers of software and systems integration services. The European CC&B software and services market will experience a 24% CAGR, growing from $1.1 billion in 1996 to $2.6 billion in 2000.

As shown in Exhibit II-4, European organisations are currently focusing on software products implementation, professional services and systems integration. Higher volumes of customer calls and increased demand for sophisticated billing services increase the need for integration of the multiple databases and network elements making up the operators' infrastructure.

New services such as mission critical support will create new opportunities in the operation and maintenance of complex CC&B information systems for vendors on the European market by the year 2000. Equipment services and outsourcing are already accepted in the U.S. market and will achieve a higher acceptance in the European market in future. Already, alternative operators and ISPs are particularly prone to outsourcing their front-office activities such as their call centre organisation or their front line help-desk.

Exhibit II-4

European CC&B Software and Services Market Breakdown by Segment 1996-2000



Source: INPUT

E

Custom CC&B Solutions Will Migrate

Exhibit II-5 lists the major IT changes telecommunications services providers currently face or will face in the short term.

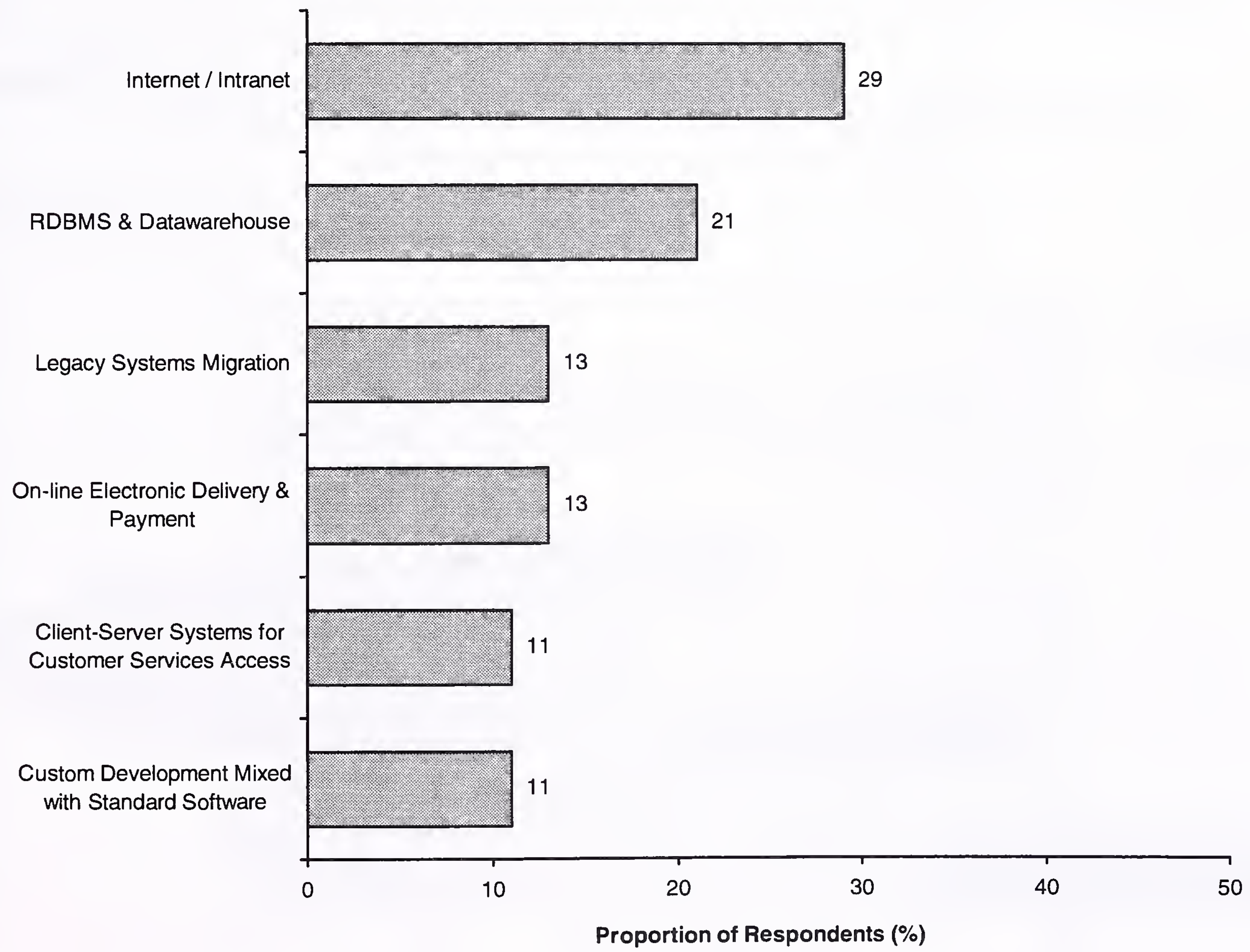
Traditionally, CC&B systems were written by the development teams of large telecommunications companies. They evolved in-house over long periods of time and were optimised for predicable markets and for a monopolistic business environment.

Many established telecommunications providers are therefore struggling with old, inflexible and costly mainframe-based billing systems precisely when the marketplace requires them to define their competitive advantage based on openness, scalability and cost-effectiveness.

Some of them mentioned that they find difficulties in changing parameters (e.g. time of day, duration and distance on a telephone call) constraining them from making changes in prices and even inhibiting the launch of new services.

Exhibit II-5

Major IT Changes within CC&B Solutions: Telecommunications Services Providers' - Europe 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

As a matter of fact, 24% said that they have to migrate their old systems and integrate new software package solutions. Although, they know that the perfect CC&B system does not yet exist as a single integrated product, they are looking for modular solutions made up of configurable software products. They say a modular solution is faster to implement as project time is shrinking and a modular system can be designed to cope easily with variations such as new tariffs or services.

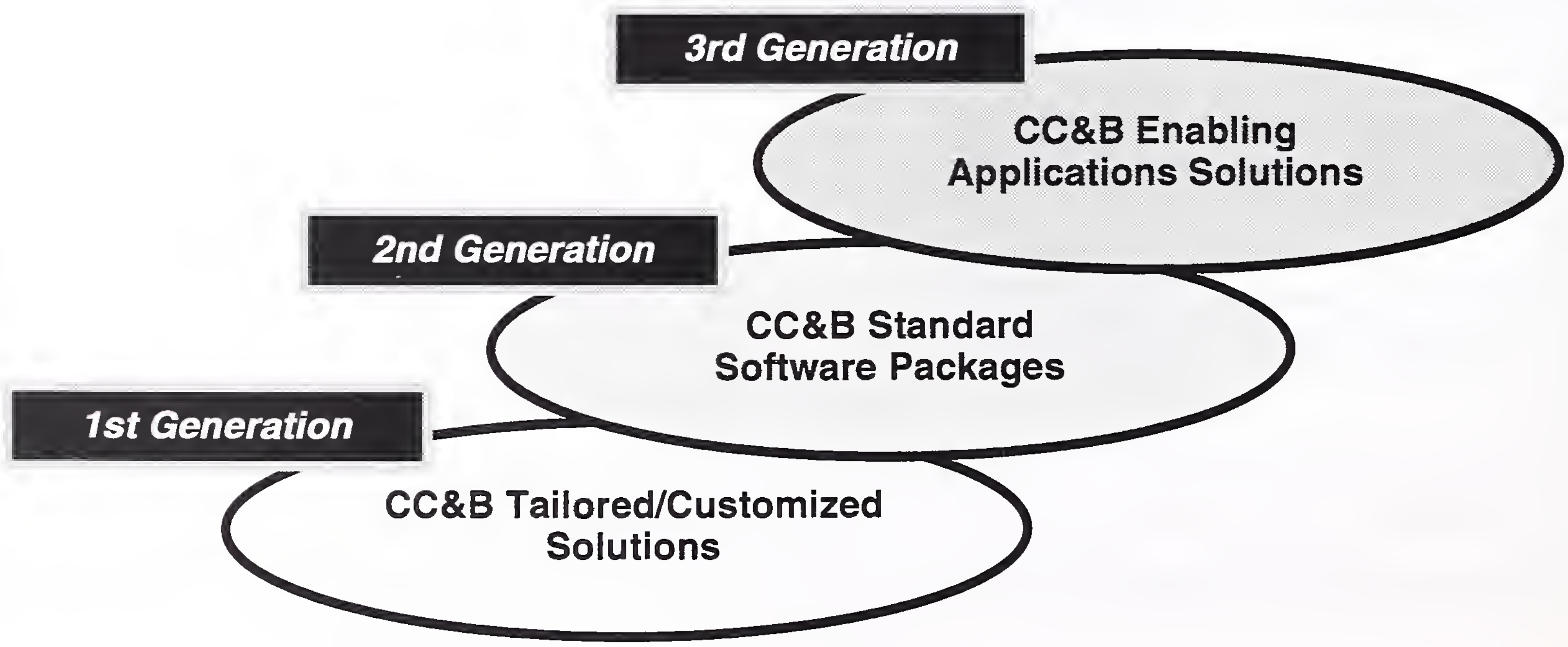
F
CC&B Enabling Applications: The Next Software Solution Generation

According to telecommunications providers, some software products seem complex to integrate. Another way for them to bypass this complexity is to consider enterprise enabling applications as a more suitable solution. This trend is most evident in some specific market segments. In Germany, some operators, especially new entrants, are testing particular modules of SAP for some billing functions.

As CC&B are converging, this new enabling model - though not limited to applications such as SAP - could represent the 3rd generation of CC&B software products (see Exhibit II-6).

Exhibit II-6

Evolution of Telecommunications Services Providers' Software Products Usage 1996-2000



Source: INPUT

G

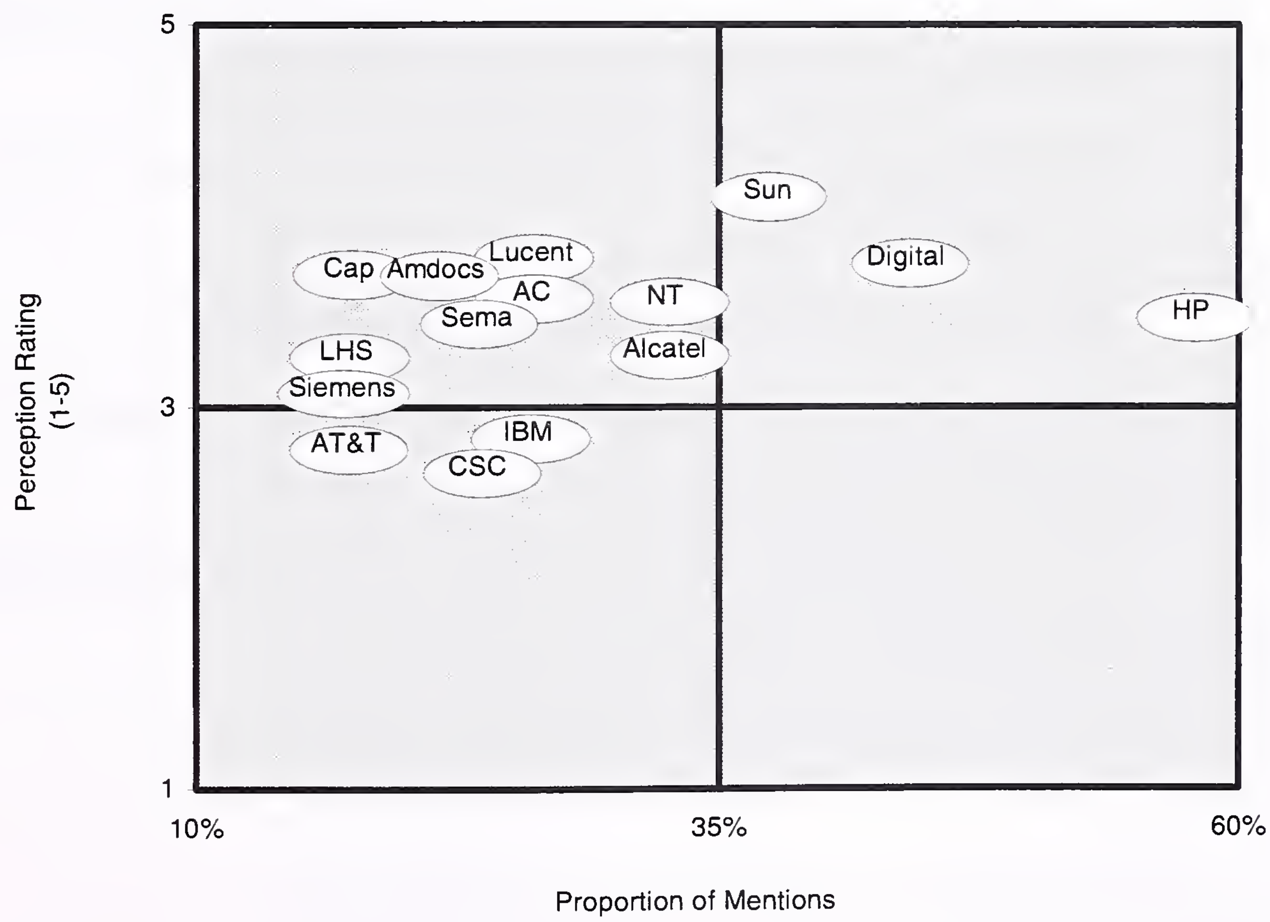
IT Service Vendors Must Offer Process Knowledge and Responsiveness

To deal with the telecommunications industry's increasingly short product and service introduction and life cycles, IT services vendors must provide robust and flexible CC&B systems that can quickly and easily handle functions such as processing of new tariffs, improved personalised billing, and timely revenue collection. They must also be able to integrate seamlessly these systems with existing IT systems and customer data bases in order to allow the organisation as a whole to derive maximum benefits that CC&B systems can offer.

Exhibit II-7 lists the principal vendors mentioned when operators were asked to cite those vendors whose CC&B expertise they recognised.

Exhibit II-7

European Telecommunications Services Providers' Perception of IT Services Vendors (prompted), 1997



AC: Andersen Consulting; Alcatel: Alcatel Telecom Software & Services; NT: Northern Telecom
Sample of 38 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance
Source: INPUT

Despite their increasing requirements for software, professional services and systems integration, telecommunications services providers seem nevertheless more familiar with solutions proposed by hardware vendors than those of software and services suppliers.

Among the major mentions:

- Alcatel Telecom, Northern Telecom and Siemens are listed for switching equipment and ACDs
- Amdocs is known for customer care applications
- Andersen is used for billing and consultancy services
- AT&T is mentioned for CC&B expertise
- Cap Gemini is listed for professional services, systems integration, technical assistance and customer care solutions
- CSC appears for consultancy services and systems integration
- Digital and HP is mentioned for hardware equipment (middleware, servers and technology) and customer care solutions
- IBM is recognised for its hardware IT equipment and network services provision
- LHS is quoted for their CC&B software products
- Lucent Technologies is positioned on ACDs equipment and systems support
- Sema provides systems integration, billing and customer care
- Sun is mentioned for IT systems (servers).

III

User Environment

A
Different Approaches Adopted by Telecommunications Services Providers

1. Major Generic Needs and Requirements

Exhibit III-1 shows the six major CC&B challenges that telecommunications services providers perceive will most influence their business over the next few years.

Focusing on Customer Information Services
Operators consider customer care to be more of a marketing challenge than a technical solution.

They must keep existing customers and win new business through attractive services packages, promotions and, above all, exceptional customer service which foster loyalty in an unstable market.

By providing regular information services to their customers, telecommunications providers seem to better manage churn and increase their business through better acceptance of new services and improvement of selling capabilities.

One-to-One Services Portfolio and « Me-Too » Services
The interaction between customer and service providers is growing constantly as telecommunications operators seek to differentiate themselves by offering individual service portfolios and tailored offerings.

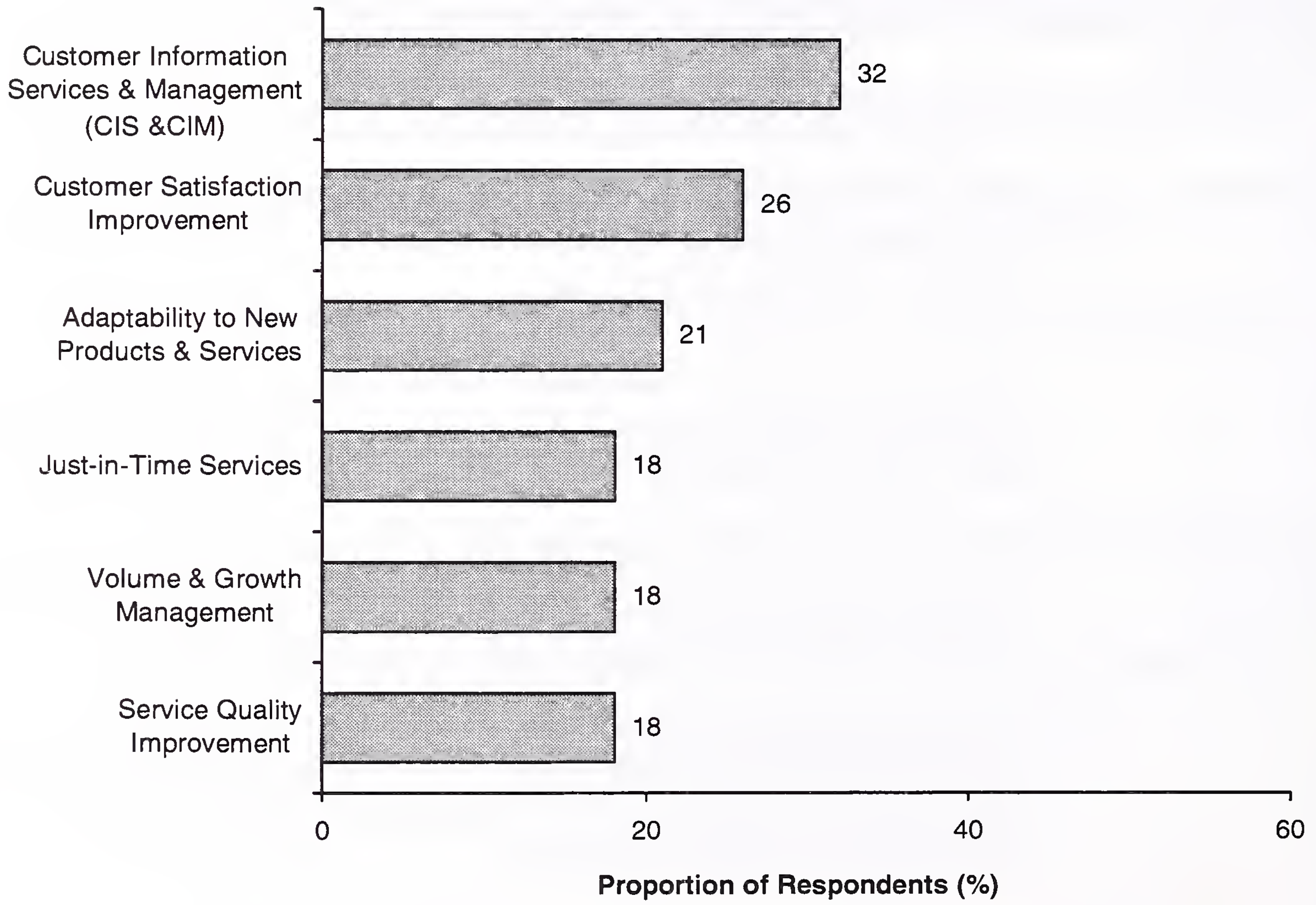
With a high performance CC&B solution, telecommunications providers assert that they are in a better position to build a 2-level services offering with a:

- 1st level composed of basic standard services
- 2nd level focusing on customisation: one-to-one service and Service Level Agreements (SLAs).

Some operators separate front-end and workflow management from customer database management. This implies software modularity and flexibility for a better adaptation to process evolution.

Exhibit III-1

Major CC&B Challenges Facing European Telecommunications Services Providers by the Year 2000



Sample of 38 Telecommunications Providers *Source: INPUT*

Availability, Scalability & Flexibility
Operators are facing just-in-time production challenges as project length, especially for the launch of new services, shortens to cycles of 3-6 months and sometimes under 3 months. Modular information systems assist them in this new implementation process. In this respect, operators' basic needs are off the shelf software products which are easy to integrate with their current systems. Anticipating a certain number of new solutions or new CC&B modules, they can assemble and integrate them as soon as new client needs are identified. This process helps them to improve:

- Time-to-market,
- Time-to-results.

This is particularly true for mobile services providers who face external fast moving markets.

As global telecommunications, cable operators and interactive service providers extend their services portfolios to include Video on Demand (VoD), on-line advanced telephony services, there is a growing demand for sophisticated and flexible CC&B systems. These systems can:

- Improve operational functionality,
- Better integrate customer service,
- Offer immediate access to customer data.

All telecommunications providers recognise that a CC&B system must provide complete billing flexibility with minimum implementation risk.

2. Business Related Markets Vs Domestic Markets

Business-to-Business Markets
Targeting business related markets implies a need for:

- Network management,
- Operational billing systems.

For traditional operators who are looking to provide more network applications solutions for the business-to-business market, customer care means network management such as Telecommunications Management Network (TMN).

They need a tool to manage the complexity of internal demands (average time per installation, service response time, etc.) and flexible billing systems (sales follow-ups).

Domestic Markets
According to telecommunications operators, an efficient customer care solution might help them in product segmentation, especially when targeting SOHO and domestic markets. Such a solution might be able to support them in designing new products and services and to decide:

- How to be customer driven?
- How to provide the right service level to the right market segment?
- How to do this at the lower cost?
- How to manage churn efficiently?

Focusing on domestic markets emphasises:

- Call centre management
- Customer management
- Flexible billing solutions.

3. CC&B are Converging as Integrated Solutions are Emerging

As illustrated in Exhibit III-2, 62% of telecommunications providers are mainly looking for fully integrated CC&B solutions. This approach would provide access to many databases, such as customer details, parts ordering and work scheduling.

They are looking for a core solution consisting of separate modules which are common across all types of telecommunications services from credit control, bill production to customer administration and management information. Each module remains specific to a telecommunications' segment such as GSM or analogue cellular applications for example.

The modules also include functions such as switches interfaces (calls and service orders), call processing, tariffing and pricing, subscriber administration and bill calculation. New modules can be developed when new technologies emerge and are directly integrated into the existing core system.

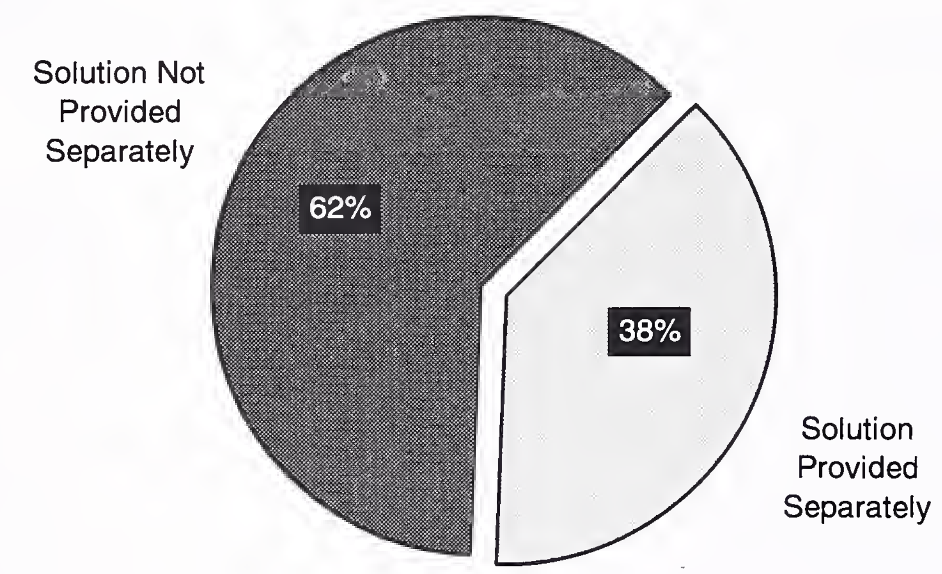
Operators who already have split their CC&B solutions in several independent modules (from orders, production, billing processing to trouble shooting) mentioned that there is a balance to find between:

- Integration which gives productivity but provides dependency
- Separation which contributes to flexibility.

They are suspicious of, and even distrust, « mass-integration » but want nevertheless a minimum of integration between modules and existing IT applications.

Exhibit III-2

Telecommunications Services Providers' Current CC&B Solution - Europe 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

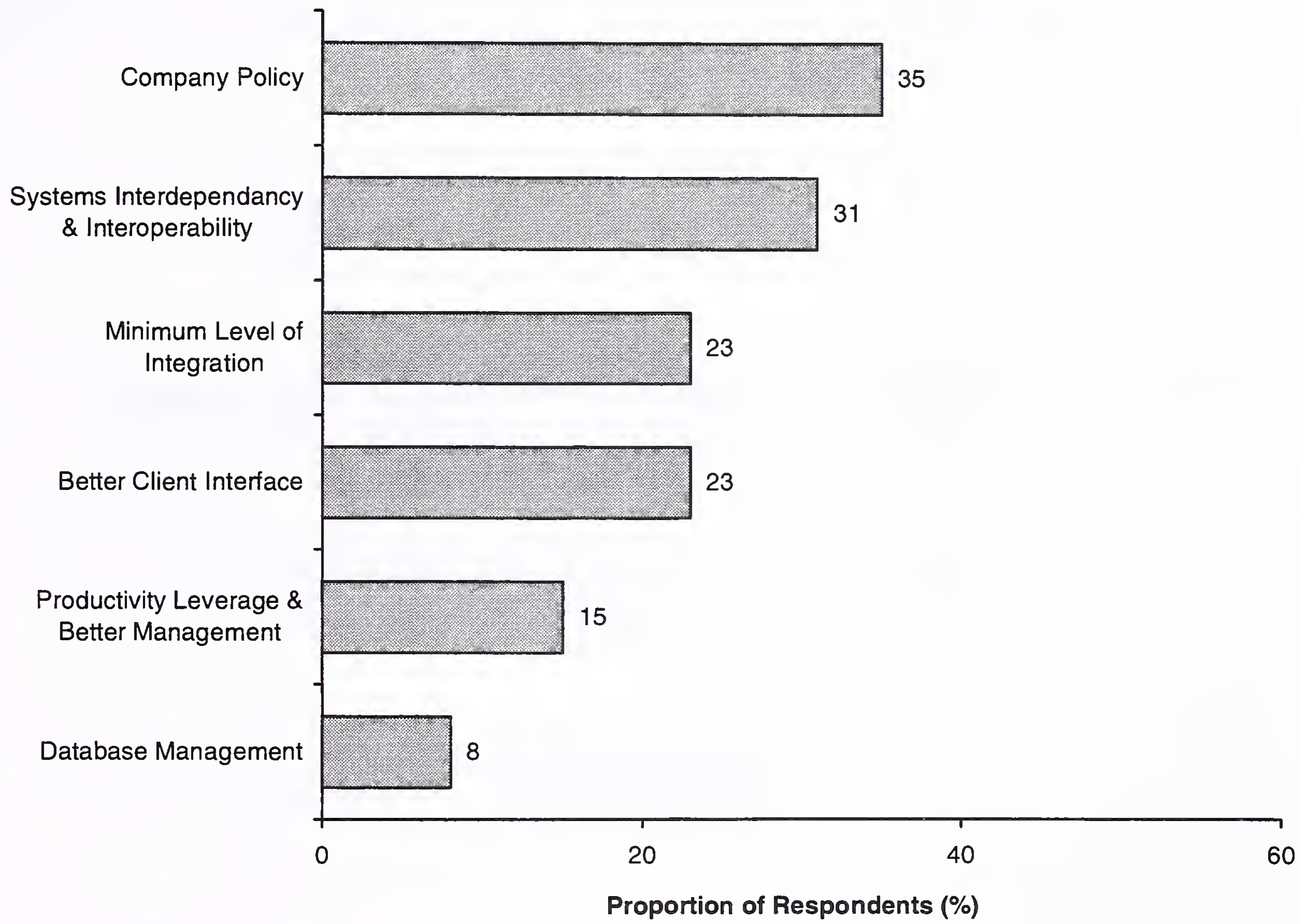
Wireless companies and new entrants complain that their current CC&B solution was forced upon them by company policies and corporate choice (see Exhibit III-3). Most of them belong to a large parent company and/or have international telecommunications shareholders that prescribed the systems they currently use or are deploying.

Traditional PTTs argue that a CC&B solution has necessarily to take into account:

- Systems interdependency and interoperability
- Minimum level of integration
- Better client interface.

Exhibit III-3

Telecommunications Services Providers' Major Reasons for Running their Current CC&B Solution - Europe 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

When separated, billing is processed by the Financial department. In other cases, the IT department, the Customer Service department and the Sales & Marketing department are directly involved in the customer care and billing implementation process. In these cases, responsibilities are delegated to the appropriate department and a project leader is appointed for coordination and conflict management.

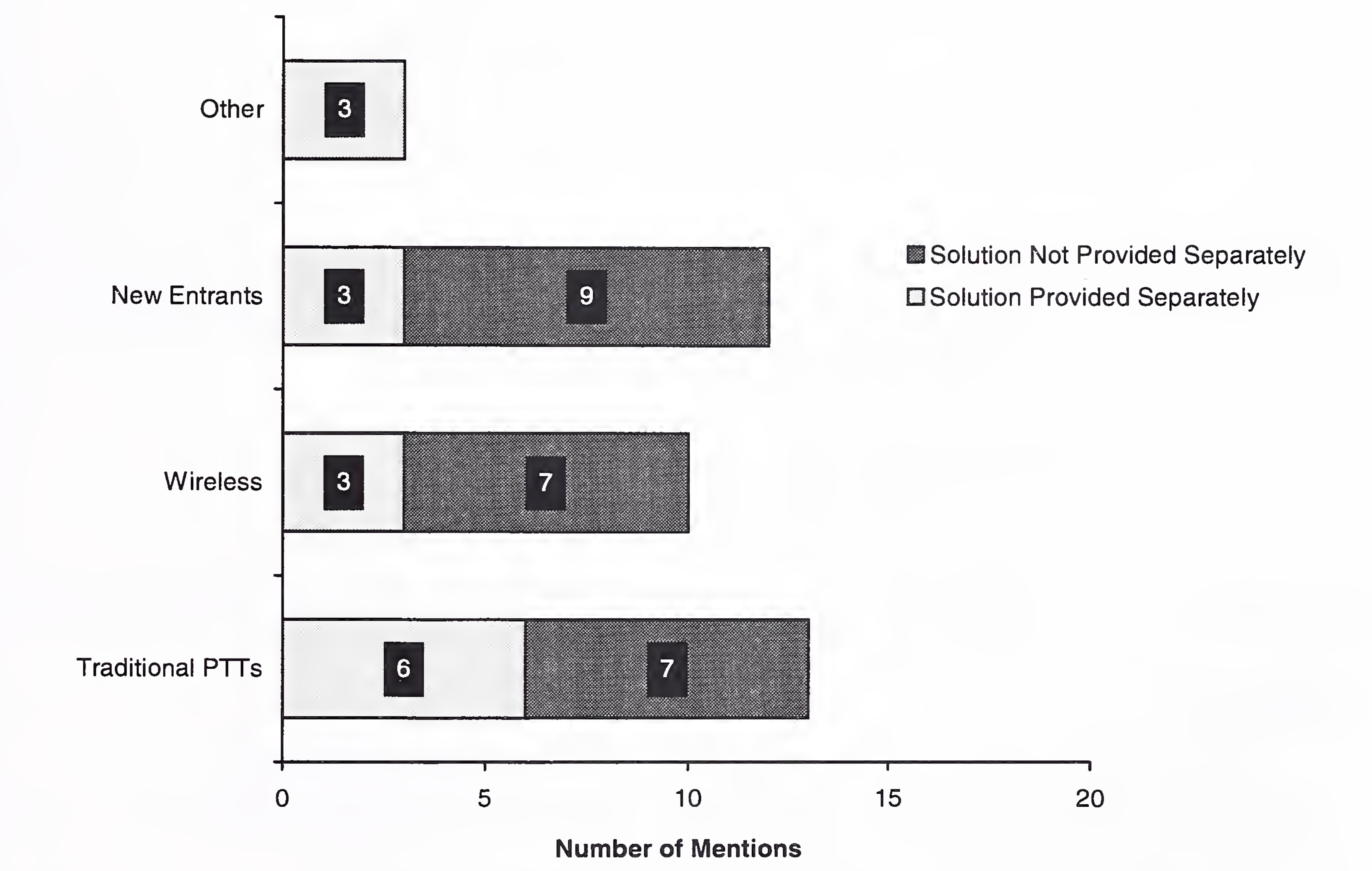
As billing is recognised as a critical function by PTTs' clients, it must necessarily include SLAs, be flexible (bills breakdown, detailed information, selection procedures, etc.) and be easy to operate when working on business-to-business markets.

Most of the respondents are aware of the impact of SLA management on their services provision image. Even if they used dissociated billing and customer care tools and approaches, the key objective remains client satisfaction improvement through new products and services offerings and adapted pricing. Regular customer surveys and benchmarks are prevalent metrics used by telecommunications services providers to evaluate client satisfaction changes.

Exhibit III-4 gives a breakdown of current CC&B solution by major telecommunications services categories.

Exhibit III-4

Current CC&B Solution by Type of Telecommunications Services Providers - Europe 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

Traditional PTTs concentrate on:

- Niche packages
- Systems migration
- Systems integration.

Their major CC&B challenges over the next few years are shown in Exhibit III-5.

Exhibit III-5

Major CC&B Challenges Facing Traditional PTTs by the Year 2000

- Flexible & Easy to Operate Systems
- Customer Information Services & Management (CIS & CIM)
- Adaptability to New Products & Services

Source: INPUT

Wireless companies demand easy-to-understand billing procedures that incorporate various mobile services from paging to mobile telephony including emerging new services. They look for:

- Scalability
- 2nd generation CC&B.

Exhibit III-6 lists the major CC&B challenges facing Wireless Providers over the next few years.

Exhibit III-6

Major CC&B Challenges Facing Wireless Providers by the Year 2000

- Volume & Growth Management
- Customer Database Management
- Customer Information Services & Management (CIS & CIM)

Source: INPUT

Mobile operators are fighting to extend their subscriber base to include a large number of low usage users. They will compensate the smaller margins generated by those users with increased number of clients. They know that their customers are demanding the most advanced services at competitive prices.

New entrant such as CATV companies, Internet Services Providers (ISPs) focus on:

- Time-to-market solutions
- Smart convergence CC&B which is both customer friendly and information rich. It can be delivered in every currency, language or format selected.

Exhibit III-7 lists the major CC&B challenges faced by new entrants over the next few years.

Exhibit III-7

Major CC&B Challenges Facing New Entrants by the Year 2000

- Service Quality Enhancement
- Customer Satisfaction Improvement
- Volume & Growth Management

Source: INPUT

For alternative telephony operators, billing is fully integrated into customer care (impact of promotional offerings, marketing of payment facilities, impact on customer behaviour of collection policies and debtor management.). Technically, the implementation of a customer care solution is indissociable from the integration of billing elements.

Online services and Internet access providers are looking for content and future applications such as electronic commerce and third-party billing.

Cable TV operators focus on customer information to analyse trends, detect new services opportunities and better manage the daily business. Because they intend to move into the telephony and Internet services market, they need to unify all their bills within a single invoice.

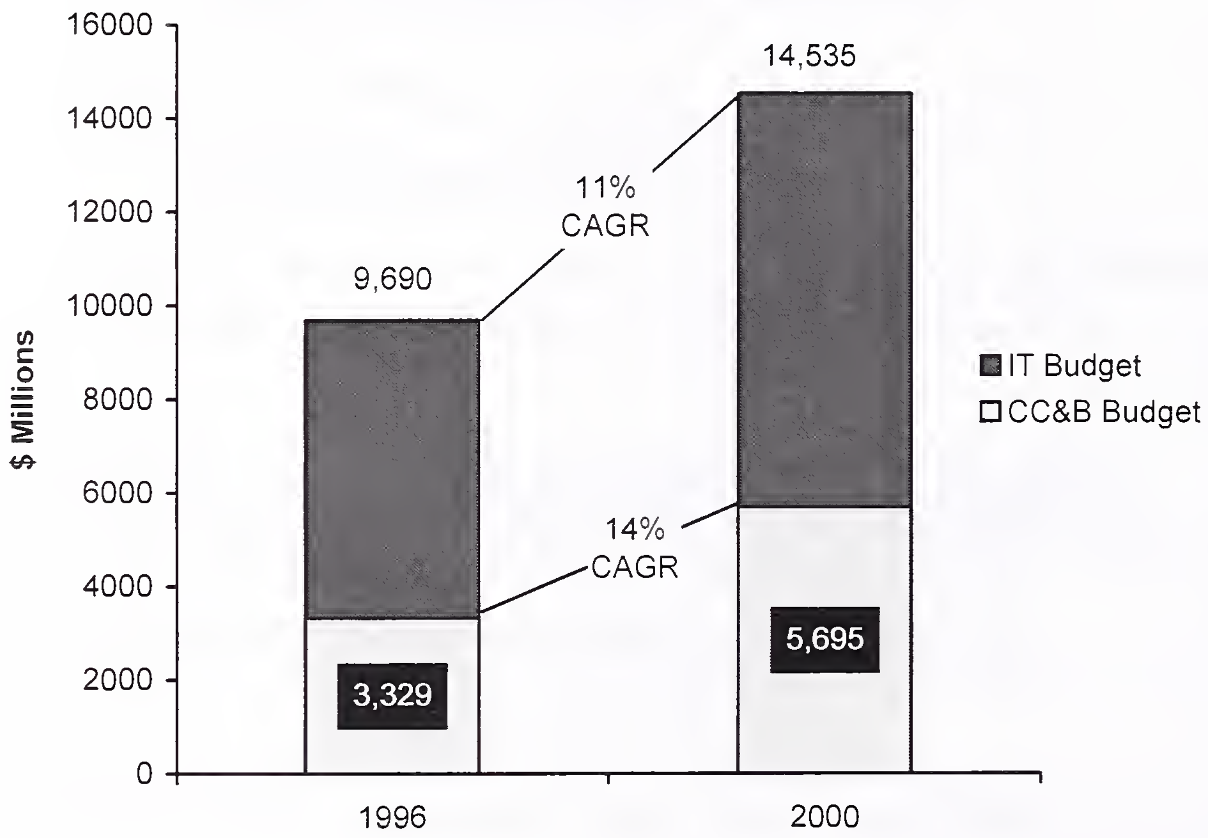
B

Telecommunications Services Focus their IT Budgets on Customer Care and Billing Improvement

Exhibit III-8 provides a forecast of telecommunications sector IT expenditure over the period 1996-2000, whilst Exhibit III-9 and III-10 respectively present an analysis of these expenditures by major European country and amongst the four major types of telecommunications services: telephony, mobile, Cable-TV (CATV) and Internet Services Provision (ISP).

Exhibit III-8

Evolution of Telecommunications Sector IT Expenditure - Europe 1996-2000



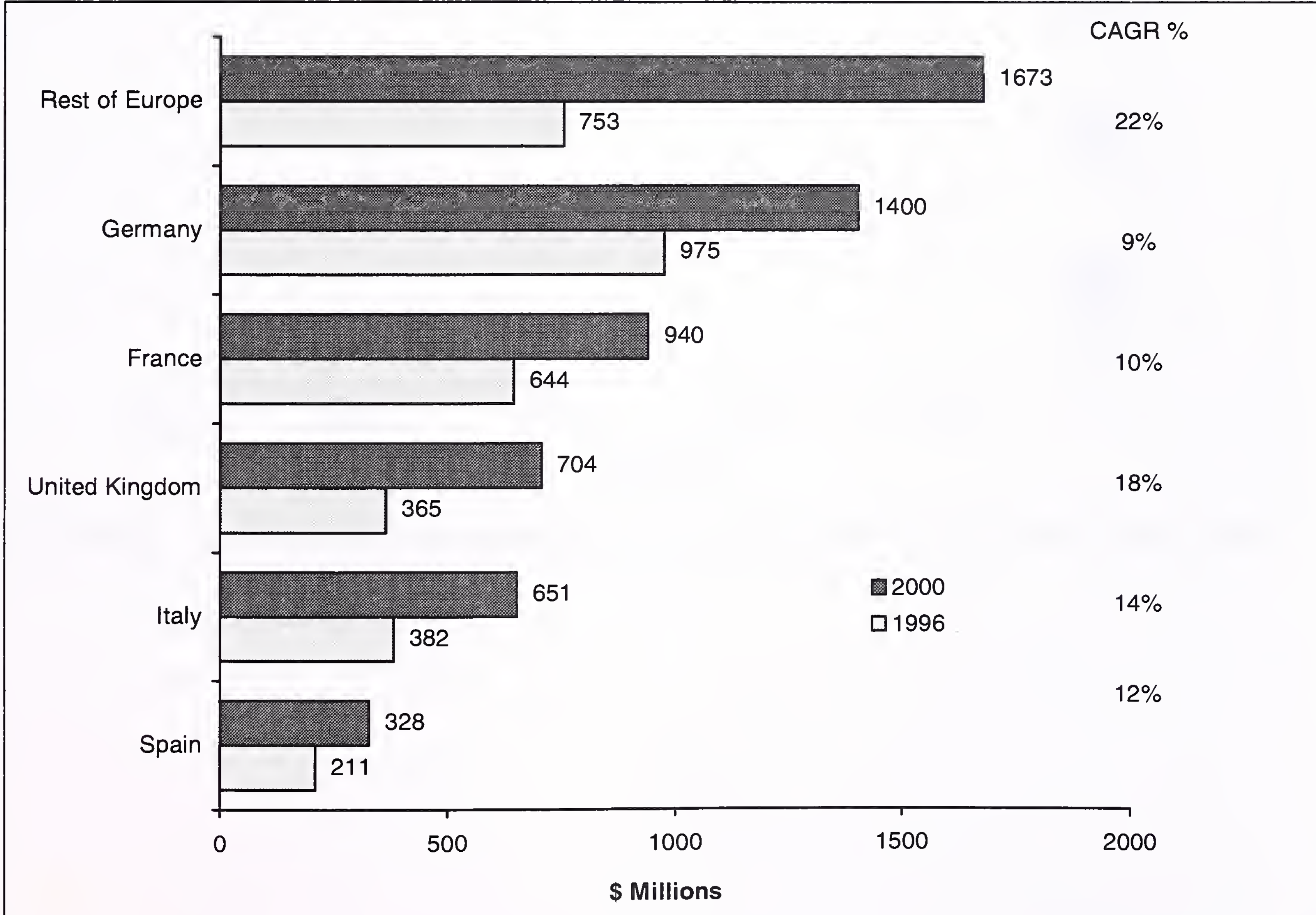
Source: INPUT

These forecasts are based on the following scenario:

- Telecommunications operators are currently spending around 30% of their IT budget on CC&B,
- CC&B is becoming the most significant function of the telecommunications providers' information system,
- The spending projections include CC&B systems, planning and design, implementation, integration, operations and other services-based provision,
- INPUT's CC&B figures do not include any network management functions (such as TMN) which is another booming area within the telecommunications market.

Exhibit III-9

European CC&B IT Expenditure – Breakdown by Country, 1996-2000

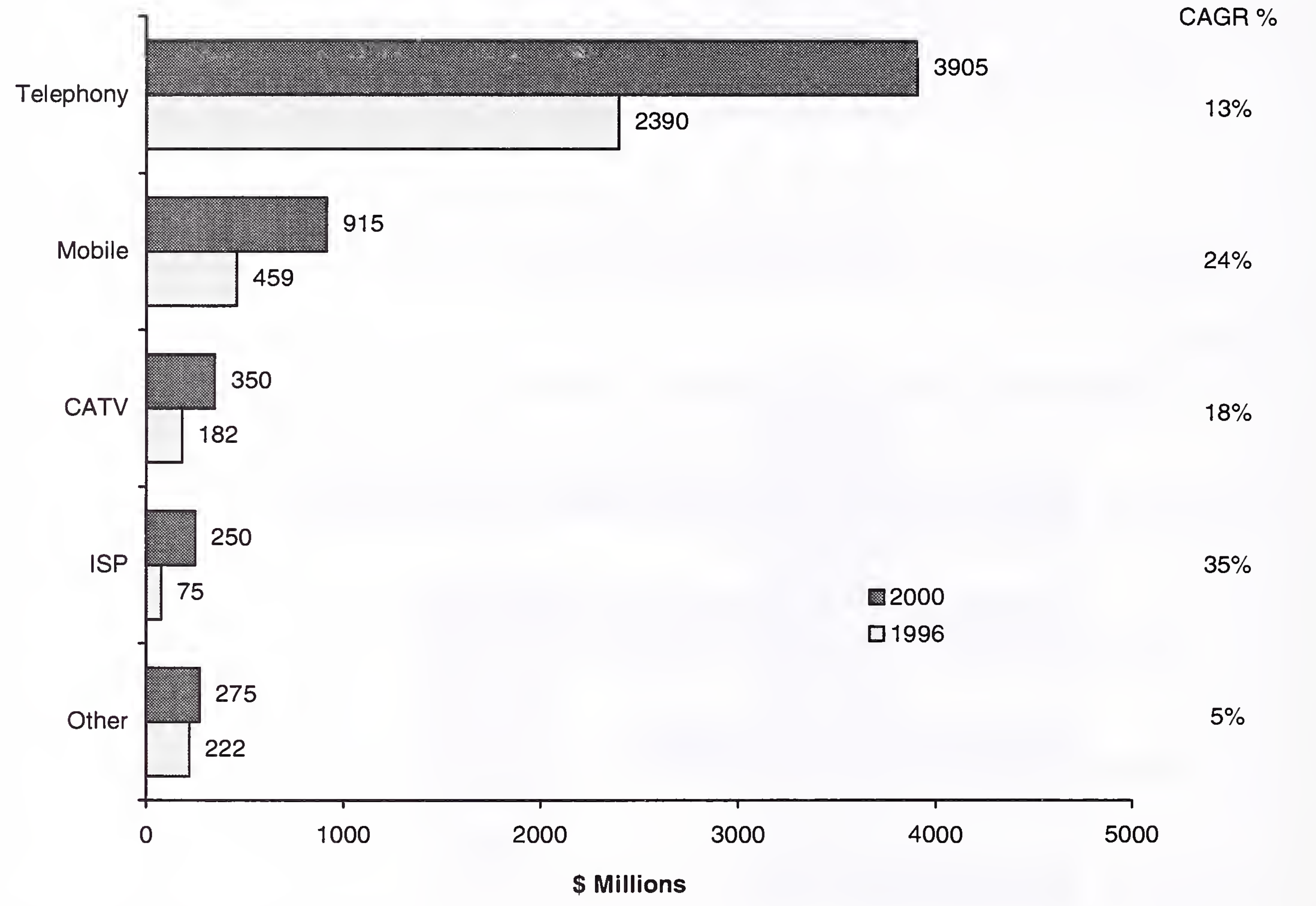


Source: INPUT

Exhibit III-10 shows that Internet services providers and wireless operators are expected to increase their CC&B IT spending the most over the period 1996-2000.

Exhibit III-10

European CC&B IT Expenditure – Breakdown by Type of Telecommunications Service Provider 1996-2000



Other companies provide VSAT, satellites, video-on-demand, video conference services, etc. *Source: INPUT*

1. Custom Solutions Need to Migrate

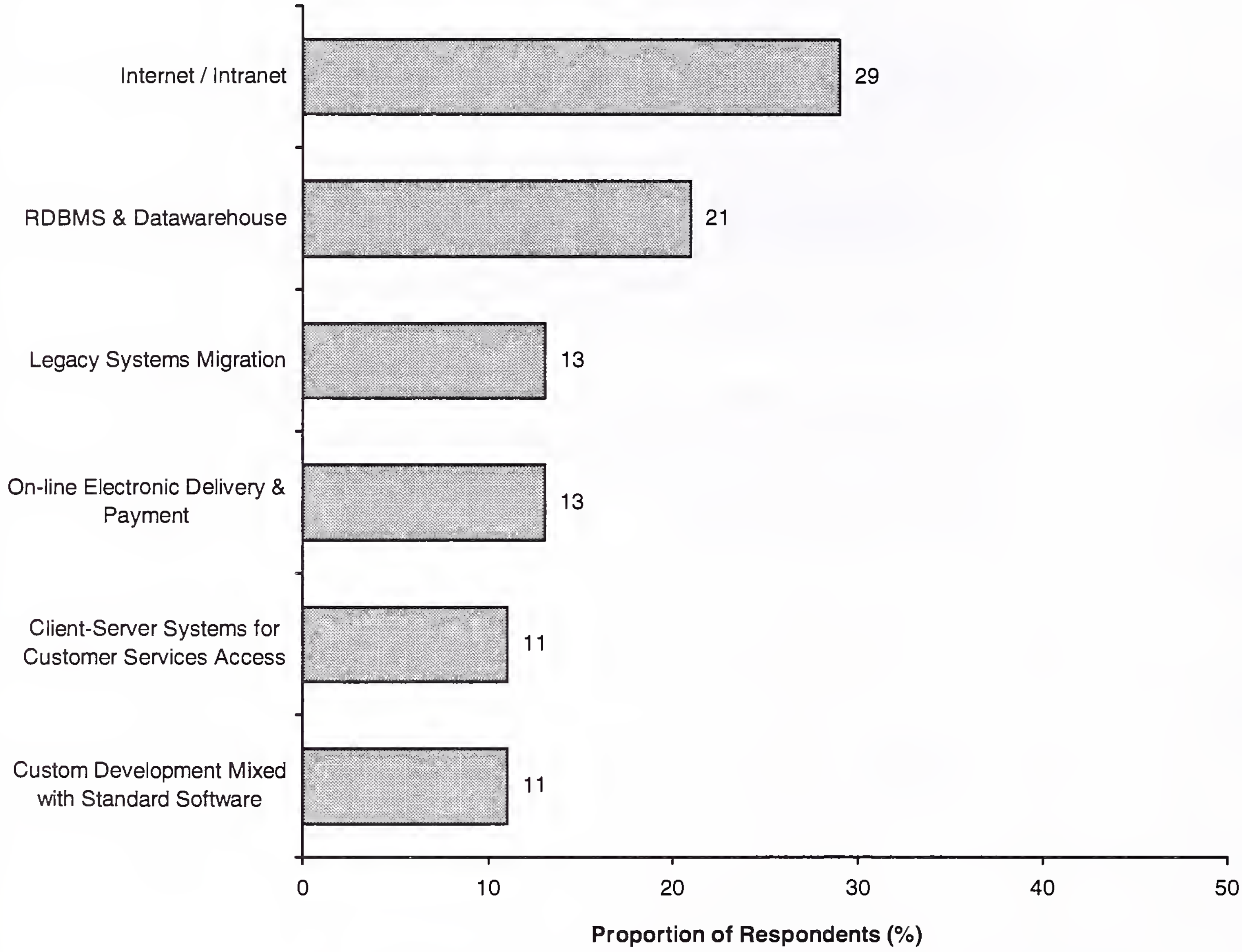
Exhibit III-11 shows major IT changes telecommunications services providers currently face or will face in a short term period.

Traditionally, CC&B systems were confined to the development teams of large telecommunications companies. They evolved in-house over long periods of time and were optimised for predicable markets and monopolistic business environment. Many established telecommunications providers are therefore struggling with old, inflexible and costly mainframe-based billing systems precisely when the marketplace requires them to define their competitive advantage based on openness, scalability and cost-effectiveness.

Some of them mentioned that they find difficulties in changing parameters (e.g. time of day, duration and distance on a telephone call) constraining them from making changes in prices and even inhibiting the launch of new services.

Exhibit III-11

Major IT Changes within CC&B Solutions: Telecommunications Services Providers' - Europe 1997



Sample of 38 Telecommunications Providers *Source: INPUT*

As a matter of fact, 24% said that they have to migrate their old systems integrating new software packages solutions. Although, they know that the perfect CC&B system does not exist yet as a single integrated product, they are looking for modular solutions made up of configurable software products. They say a modular solution is faster to implement as project time is shrinking and a modular system can be designed to cope with variations easily such as new tariffs or services.

2. New Solutions Mostly Based on Standard Software Packages

At the beginning of the 90s, there were no really durable standard solutions available on the European market. Traditional operators had to develop in-house solutions. Since the mid-90s, the CC&B software market

has became more mature and these companies are purchasing standard software package(s) and integrating it/them with their legacy systems. They are willing to migrate to standard software package(s) through an integration process.

This is particularly true with new entrants, such as mobile services providers, who are directly purchasing standard software packages and assembling them as object-oriented components (cf. Corba concept). All of them must follow the standard technical requirements of the company. There can be over 1,000 components to manage within one organisation from fraud detection systems to trouble ticketing applications. The new challenge for them is to:

- Manage all these components in an appropriate way

- Anticipate future needs on the market so as to implement new components in time.

Conversely, global network operators experience difficulties in finding an integrated solution that can take into account all of their requirements. They claim it is not easy to use standard software packages compatible with their global solutions. They need a high level of systems sophistication because of their wide scope of activity and coverage.

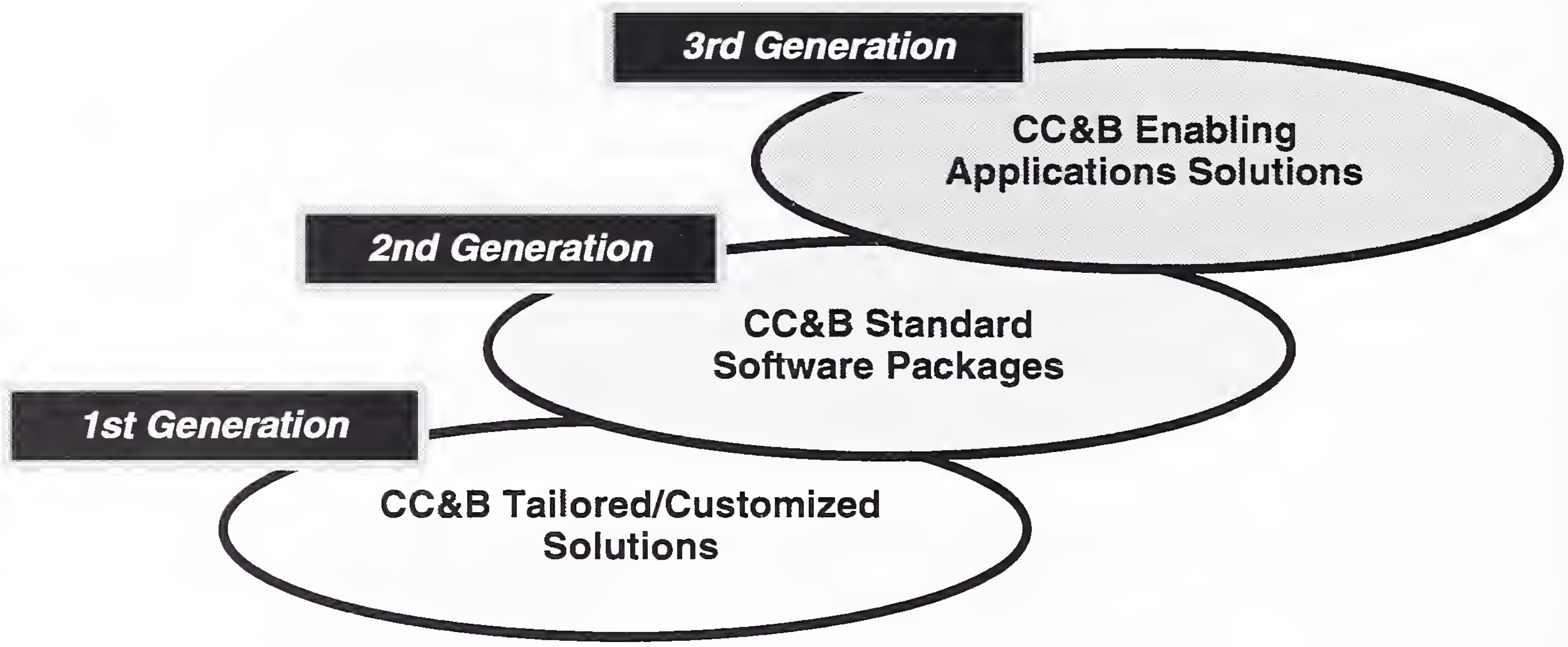
3. The Next Generation: Enterprise Enabling Applications Solutions

According to telecommunications providers, some software products seem complex to integrate. Another way for them to bypass this complexity is to consider enterprise enabling applications as a more suitable solution. INPUT has seen this trend appear in some specific market segments. In Germany, some operators, especially new entrants, are testing particular modules of SAP for some billing functions.

As CC&B are converging, this new enabling model - though not limited to applications such as SAP - could represent the 3rd generation of CC&B software products (see Exhibit III-12).

Exhibit III-12

Evolution of Telecommunications Services Providers' Software Products Usage 1996-2000



Source: INPUT

C

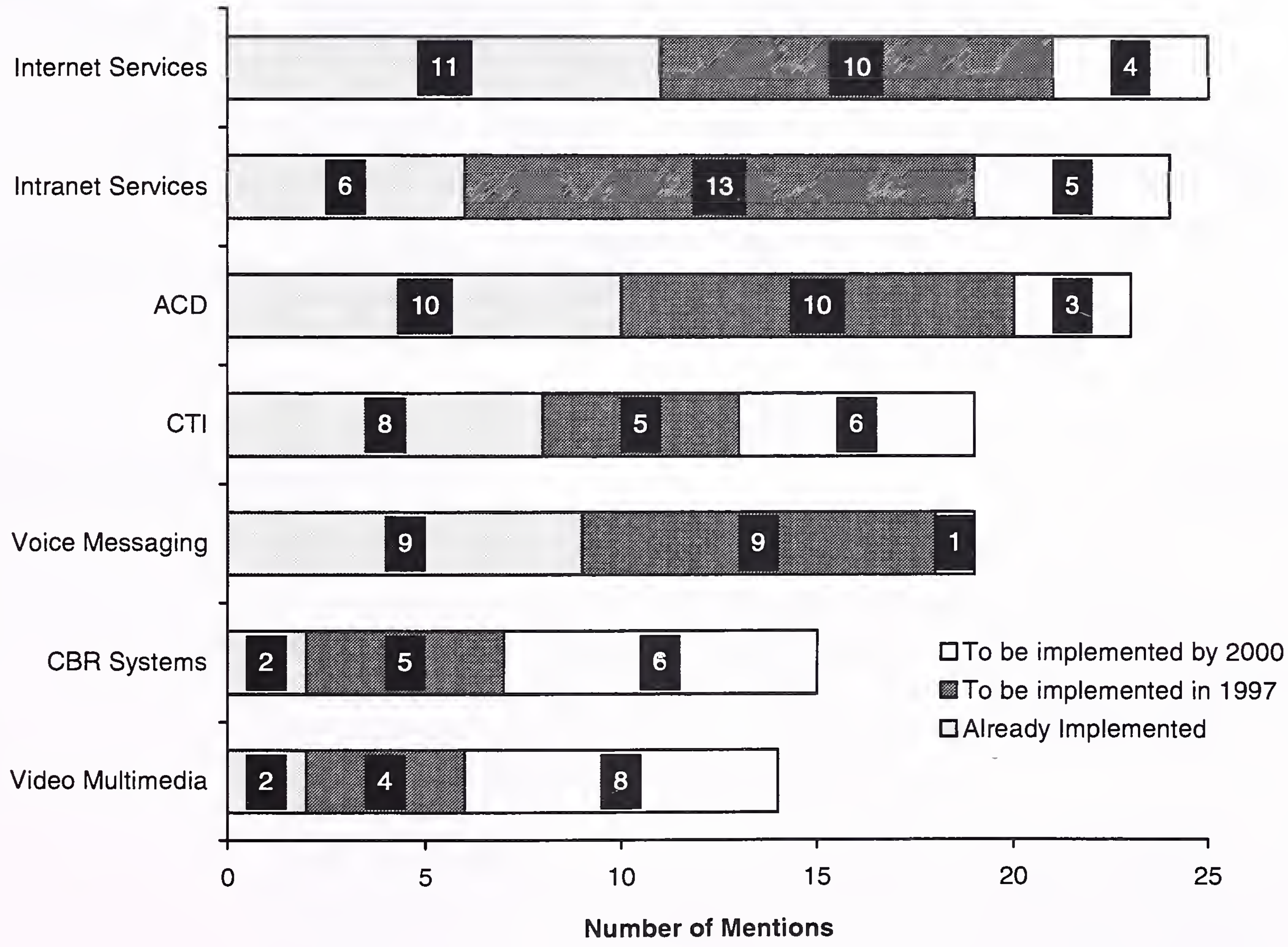
Deployment of Advanced Technologies Set to Increase CC&B Penetration

All telecommunications operators see the Internet, and especially Intranets, as an indisputable client interface improvement and, consequently, as a decisive media.

Exhibit III-13 & III-14 illustrate this common appreciation among these organisations.

Exhibit III-13

Future Usage of New Technologies - Short Term European Telecommunications Services Providers'



Sample of 38 Telecommunications Providers *Source: INPUT*

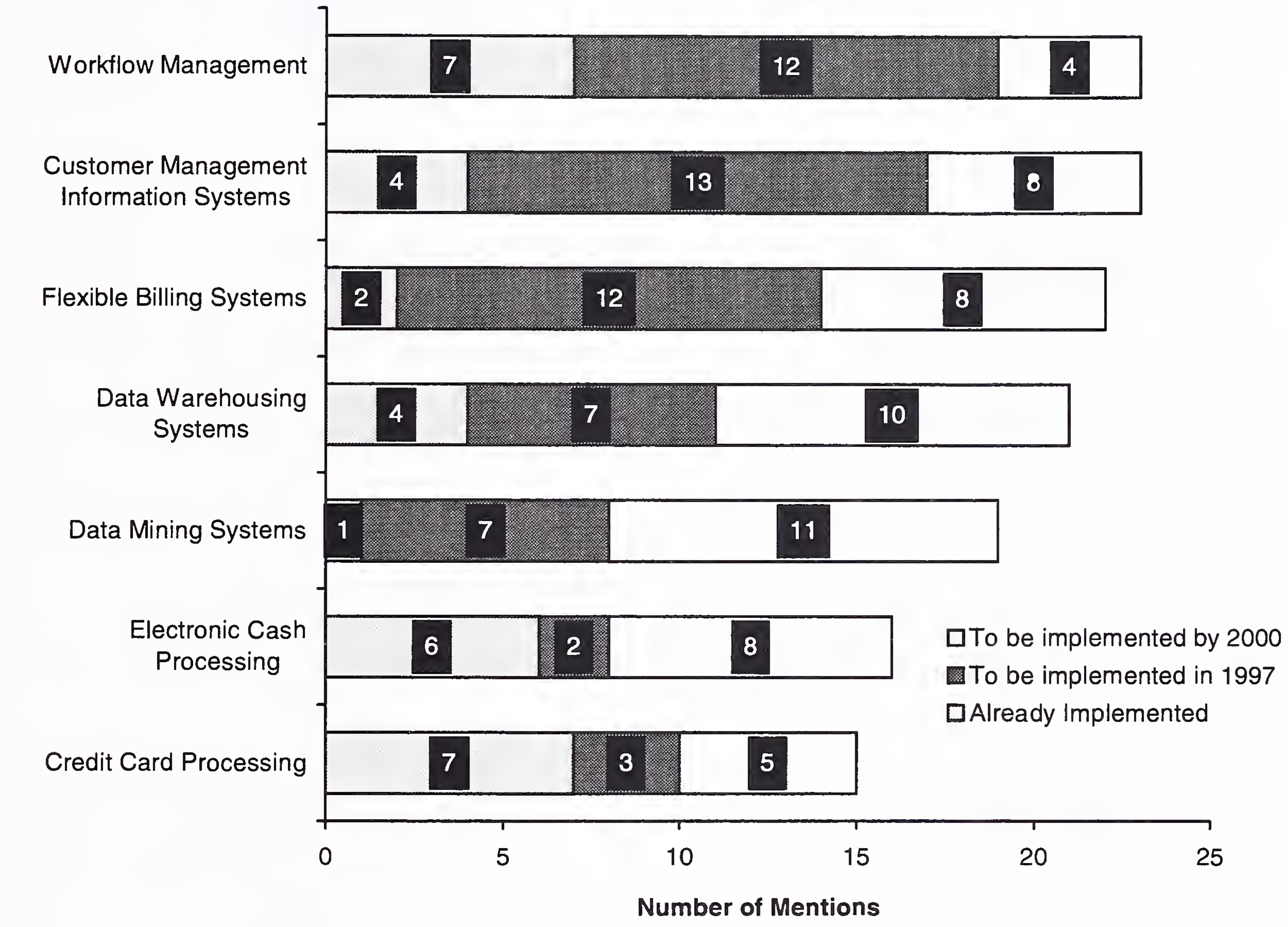
For telecommunications services providers targeting the SOHO market and/or the domestic market, call centres are to evolve to integrate new technologies such as:

- Internet and ISDN access
- Computer Telephony Interface (CTI)
- Case-Based Reasoning Systems (CBR)
- Voice mail servers, etc.

CTI is going to change the way customers do business, and telecommunications providers have to prepare for it with products that fit the new environment and give real-time solutions to customers' problems. CTI is already recognised as a necessity, especially for handling domestic mass market requirements.

Exhibit III-14

Future Usage of New Technologies - Medium Term European Telecommunications Services Providers'



Sample of 38 Telecommunications Providers *Source: INPUT*

At the same time, their usage of datawarehouses, knowledge management databases and information processing systems should considerably increase to improve sales and marketing actions. By use of such systems, they should have in-depth, pertinent and relevant knowledge of customer attitudes and behaviour.

Some companies try to find ways to re-engineer business support infrastructures to make them more effective. According to them, on-line access provides the appropriate information to respond to a customer's enquiry. They are now able to offer the necessary tools, technology and applications (such as common interfacing and synchronisation of data between multiple systems and databases) for connecting business support systems. Through these tools and applications, they design a single and common interface for all their customer care needs.

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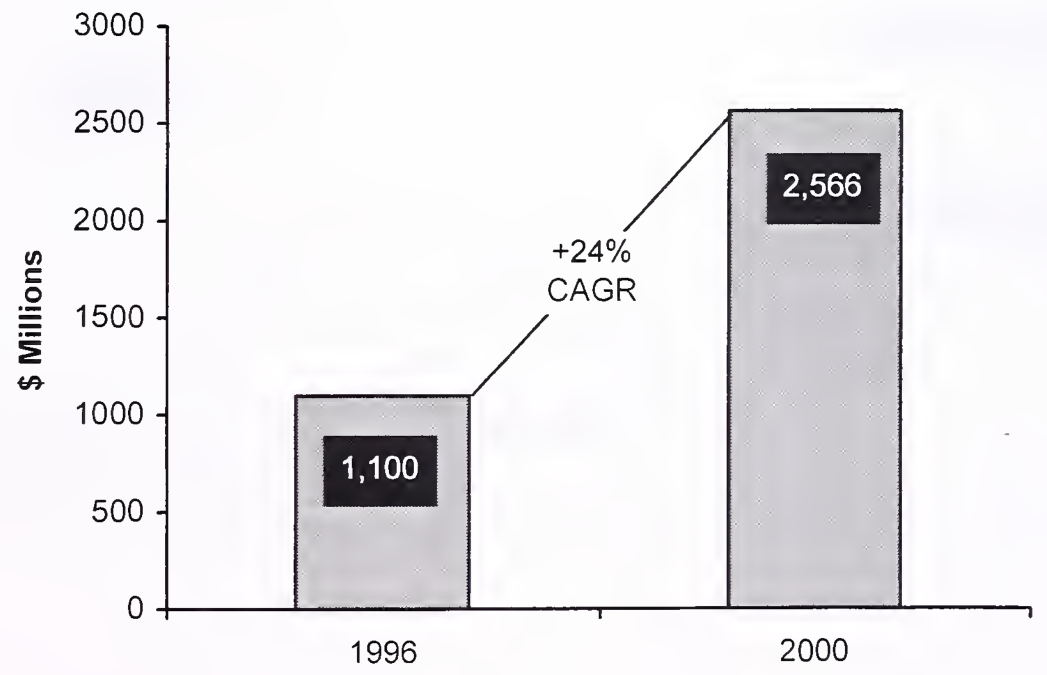
IV

Market Forecast and Vendor Selection

As illustrated in Exhibit IV-1, a steady rise in IT CC&B-related services provision from professional services, systems integration, software products to network services and operations is forecast over the next few years.

Exhibit IV-1

European CC&B Software and Services Market, 1996-2000



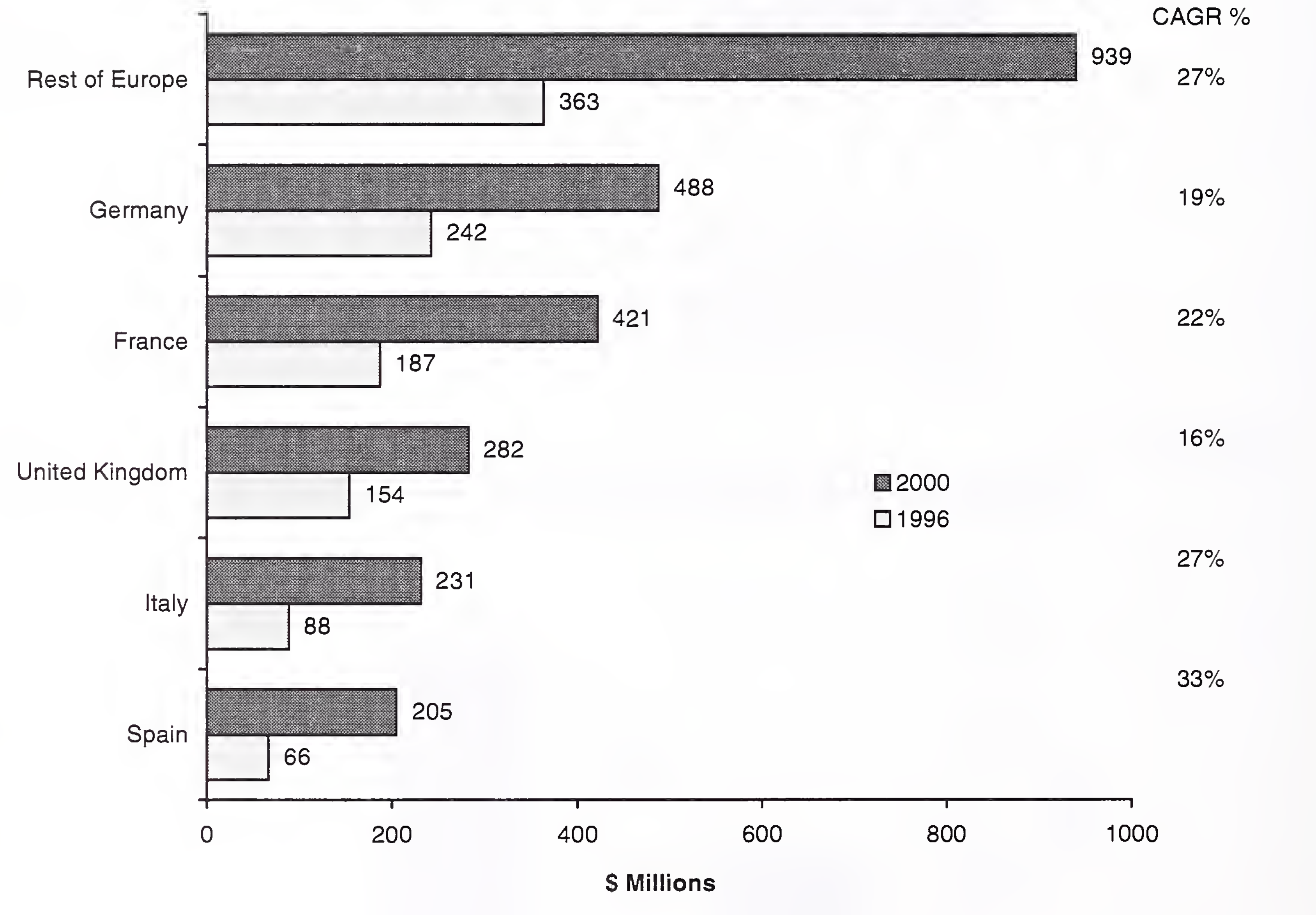
Source: INPUT

Exhibit IV-2 provides details of the growth of the CC&B software and services market by major European countries in the period 1996 to 2000.

Most noticeable is the UK telecommunications market which is ahead of the rest of Europe in terms of deregulation and has already massively invested in CC&B software and services. As a consequence, this market will grow at a slower pace than the other markets.

Exhibit IV-2

European CC&B Software and Services Market Breakdown by Country 1996-2000



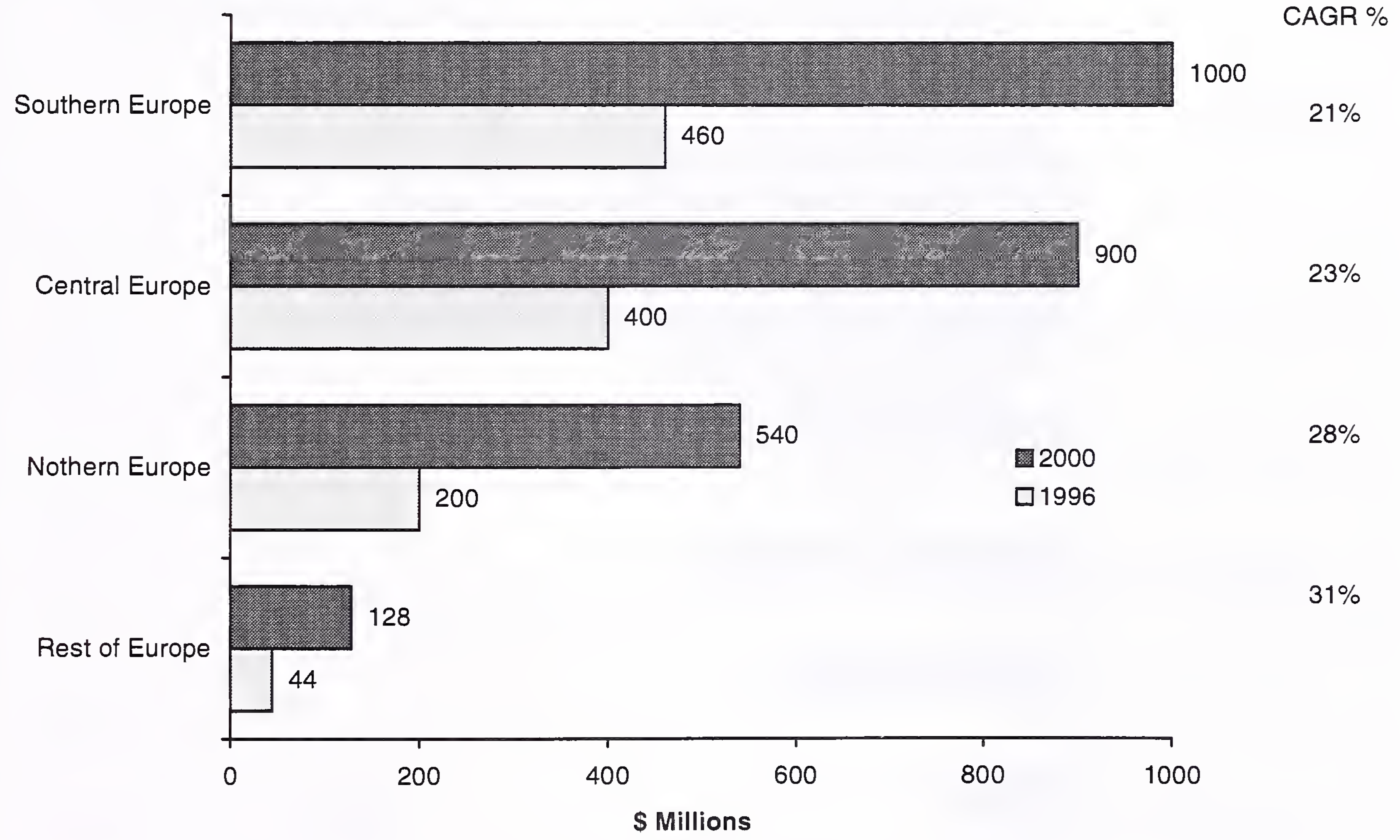
Source: INPUT

When consolidated by major regions, the CC&B software and services market is not homogeneous across Europe. As shown in Exhibit IV-3:

- Southern and Central Europe represent the highest volumes of the market but the lowest growth rates
- Northern Europe will triple by the year 2000 boosted by the Nordic Countries.

Exhibit IV-3

European CC&B Software and Services Market Breakdown by Region, 1996-2000



Southern Europe: Belgium, France, Greece, Italy, Luxembourg, Portugal, Spain
Northern Europe: Denmark, Ireland, Island, Netherlands, Norway, Sweden, UK
Central Europe: Austria, Germany, Switzerland

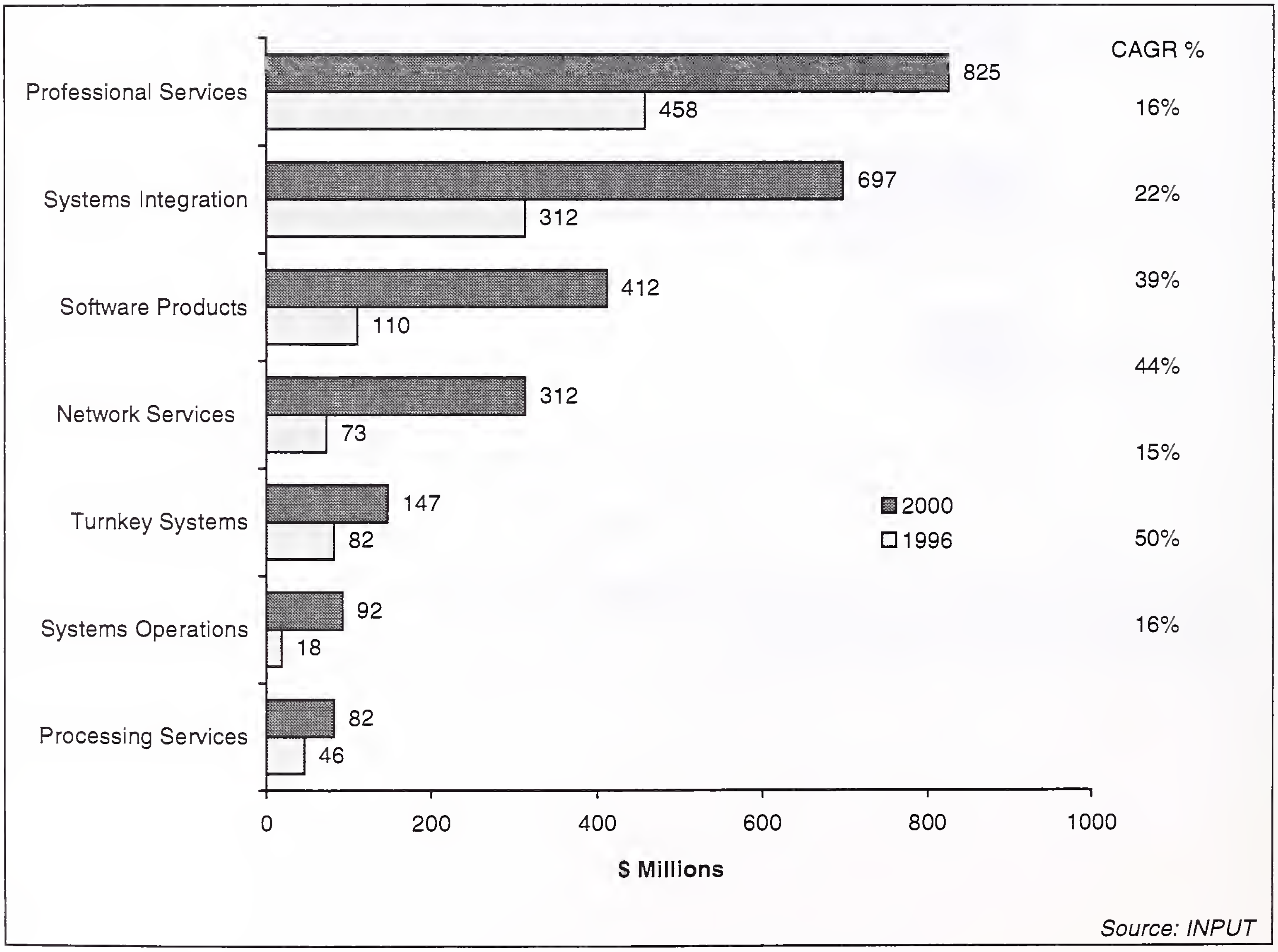
Source: INPUT

Even though some software vendors have been making aggressive moves in bringing down the costs of their products to keep new clients and, to gain a competitive edge, Exhibit IV-4 shows that the software products market should experience the highest growth alongside network services, including all network carrier's facilities to other internal groups and to clients.

Improving customer service or front-end operations such as call centre operations is at the forefront of almost every integration project undertaken by telecommunications providers. But services providers are also concentrating on integrating back-office operations, such as financial analysis, network functions, product development and design, allowing different departments (finance, accounting, human resources and marketing) to be involved in the overall business process.

Exhibit IV-4

European CC&B Software and Services Market Breakdown by Segment 1996-2000

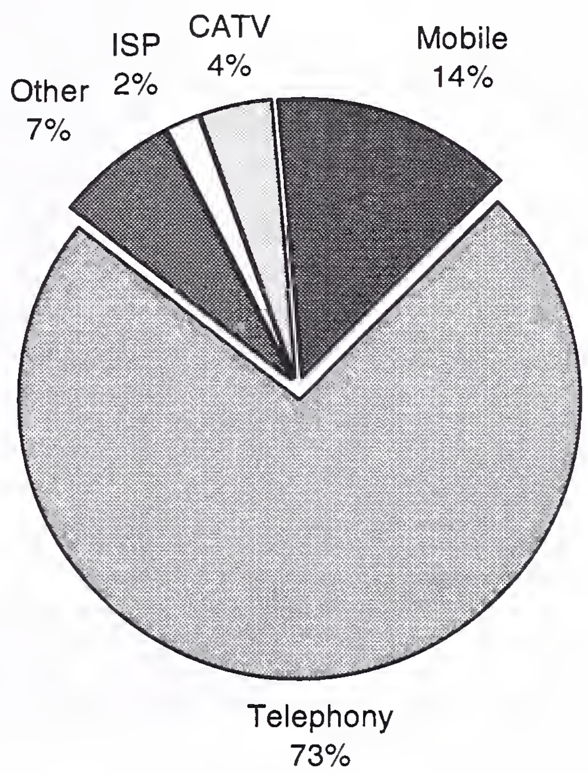


Source: INPUT

Exhibits IV-5 and IV-6 show that telephony service will still represent the biggest part of the pie though mobile services and Internet services provision are expanding extremely quickly. By the year 2000, telephony services should continue to account for more than two-thirds of the CC&B software and services market.

Exhibit IV-5

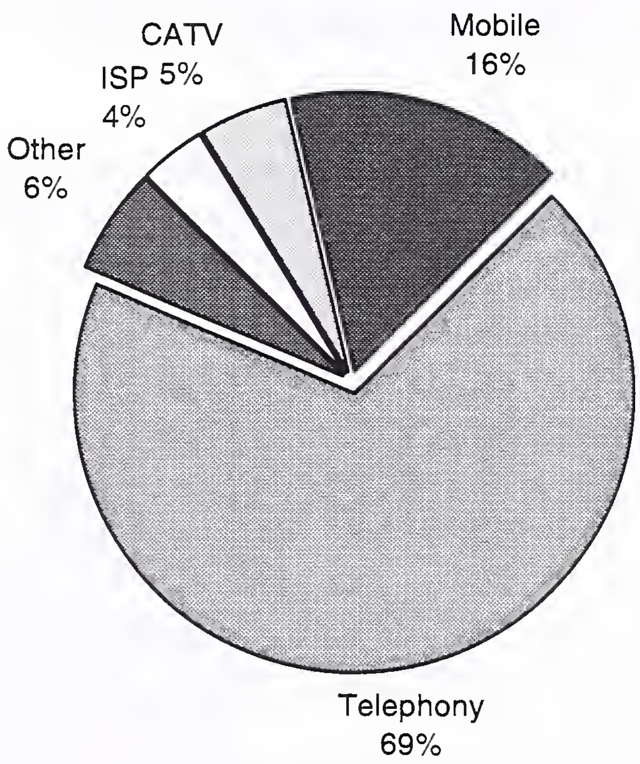
European CC&B Software & Services Market – Breakdown by Major Telecommunications Services Providers 1996



Sample of 38 Telecommunications Providers - Multiple Choice *Source: INPUT*

Exhibit IV-6

European CC&B Software & Services Market – Breakdown by Major Telecommunications Services Providers 2000



Sample of 38 Telecommunications Providers - Multiple Choice *Source: INPUT*

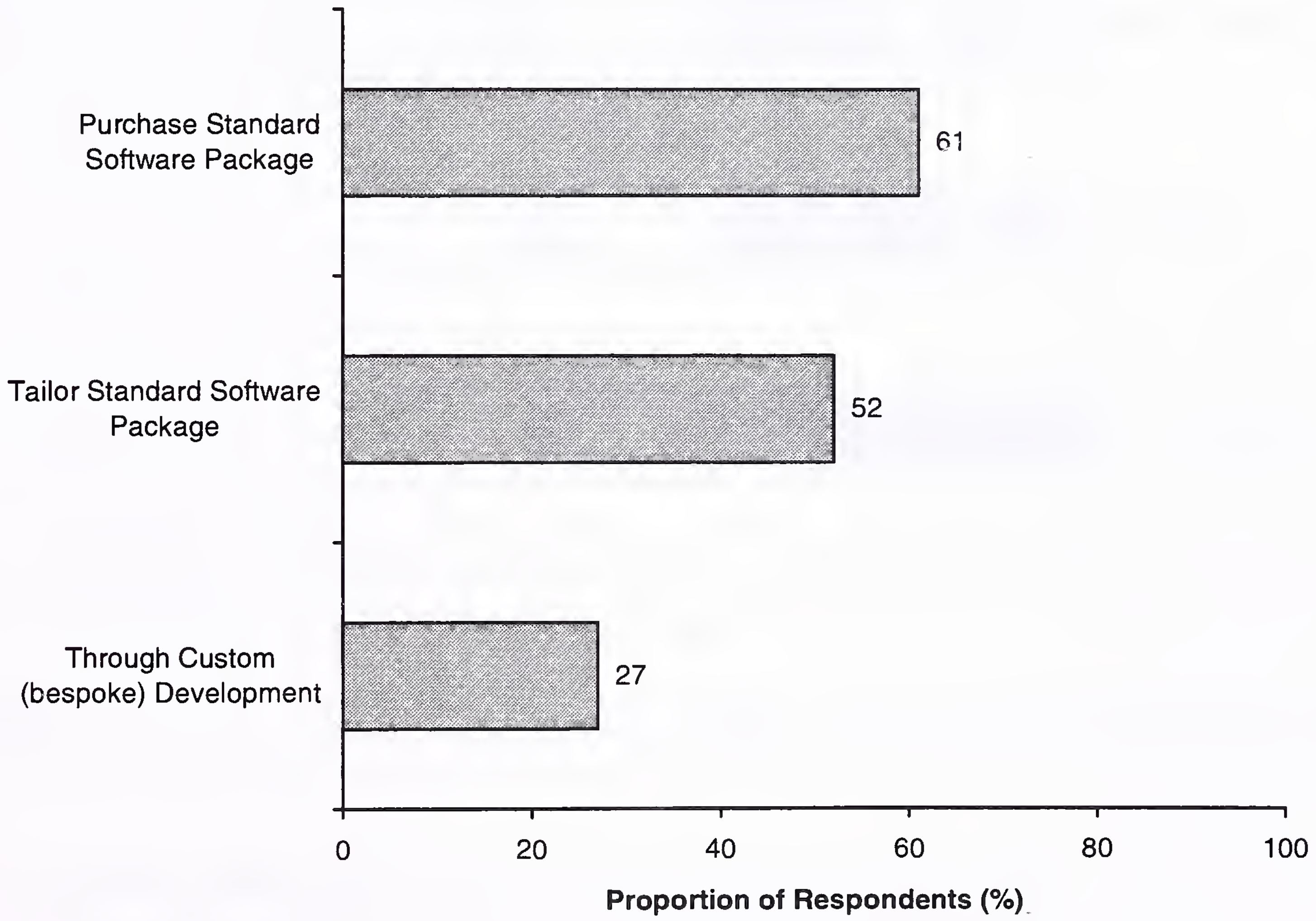
A

Standard Software Products: A New Market is Emerging

In Europe, demand for standardised CC&B systems is growing rapidly. As shown in Exhibit IV-7, nearly two-thirds of the organisations interviewed plan to purchase standard software packages. Half of them would consider tailored solutions adapted to their existing CC&B systems and other in-house applications.

Exhibit IV-7

Level of Software Packages Purchase - Europe 1997

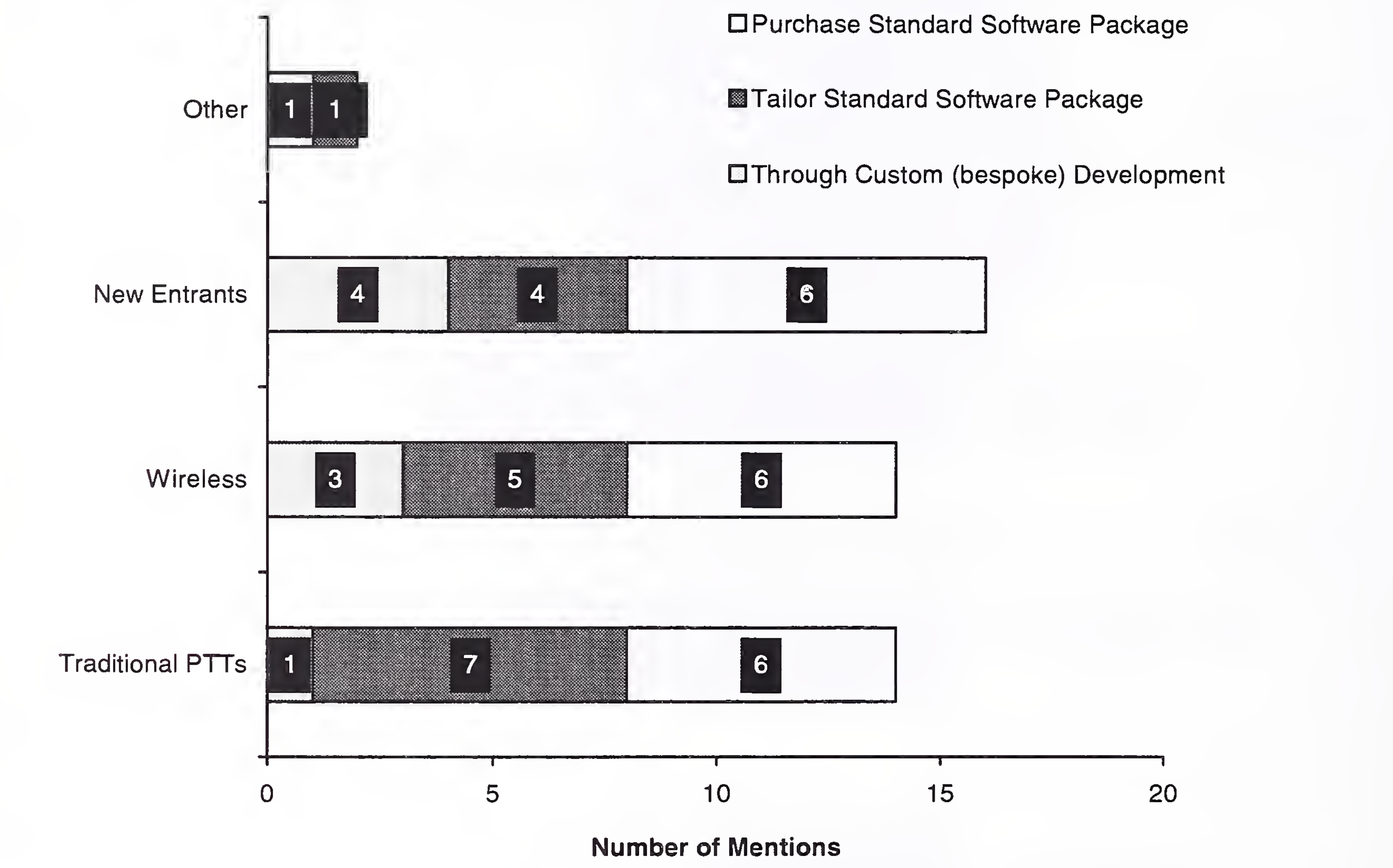


Sample of 38 Telecommunications Providers - Multiple Choice *Source: INPUT*

This is particularly the case for new entrants that do not have any existing systems to migrate and are currently designing and implementing their CC&B solutions. Exhibit IV-8 lists the approaches to software undertaken by telecommunications service provider type.

Exhibit IV-8

Type of Software Purchased by Services Providers - Europe 1997



Sample of 38 Telecommunications Providers - Multiple Choice *Source: INPUT*

Except for some basic elements, nearly every standard software product is too complicated to be sold as an off-the-shelf endeavour and to constitute a CC&B solution in itself. A majority of services providers mentioned the complexity of implementing, and integrating these products with their existing solution.

B

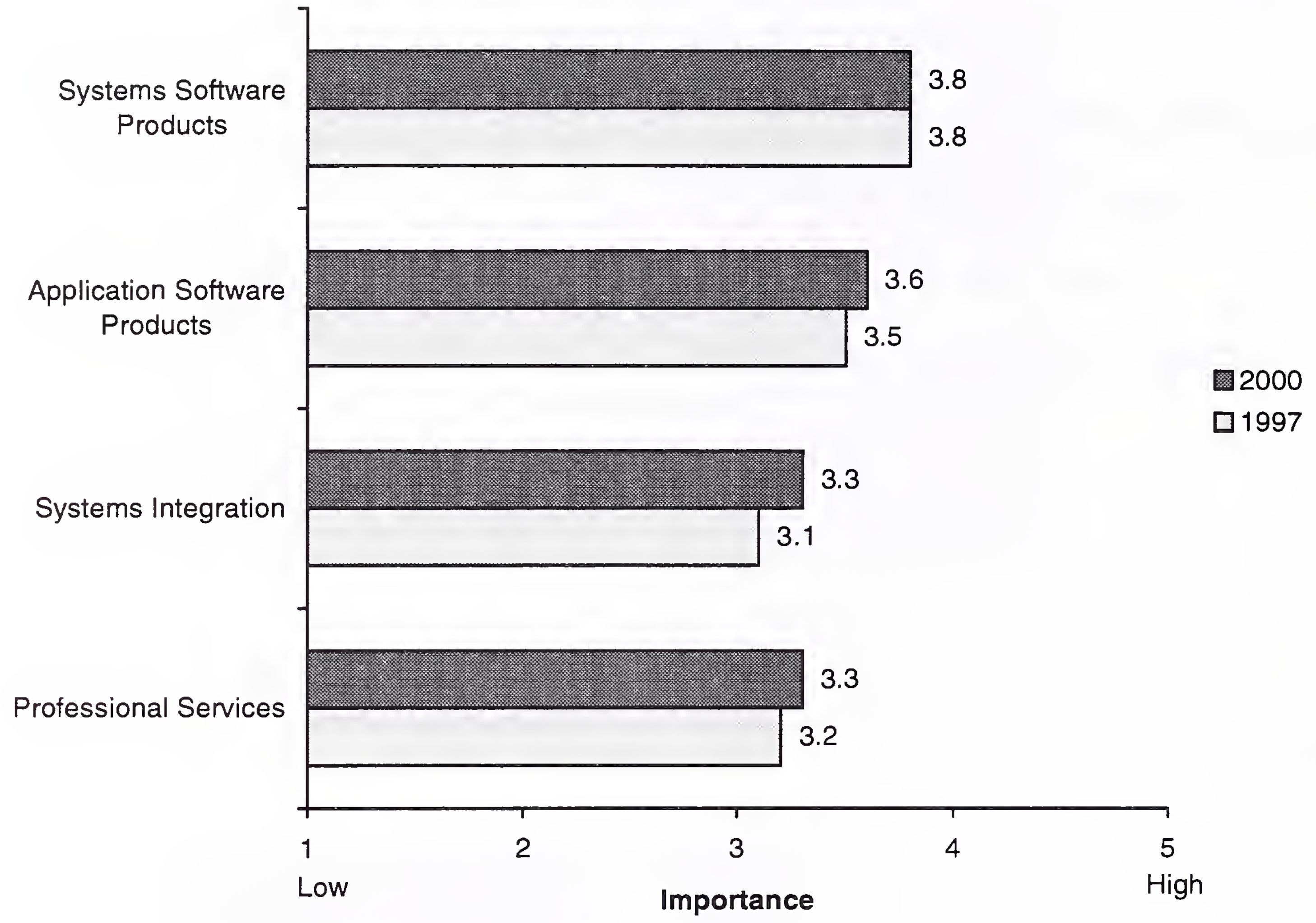
Markets for Systems Integrators

Questioned on how they would prioritise their external IT spending, almost all of the European executives participating in INPUT's survey gave systems software and application software products high priority. Another high-scoring priority was professional services and systems integration. Exhibit IV-9 illustrates the highest priorities for these organisations.

Higher volumes of customer calls and increased demand for sophisticated billing services increase the need for integration of multiple databases and network elements making up the operators' infrastructure. The results of that integration have to be made available quicker than ever, providing new opportunities for systems integrators.

Exhibit IV-9

Areas with Highest Need for External Service - Europe 1997-2000



Sample of 38 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

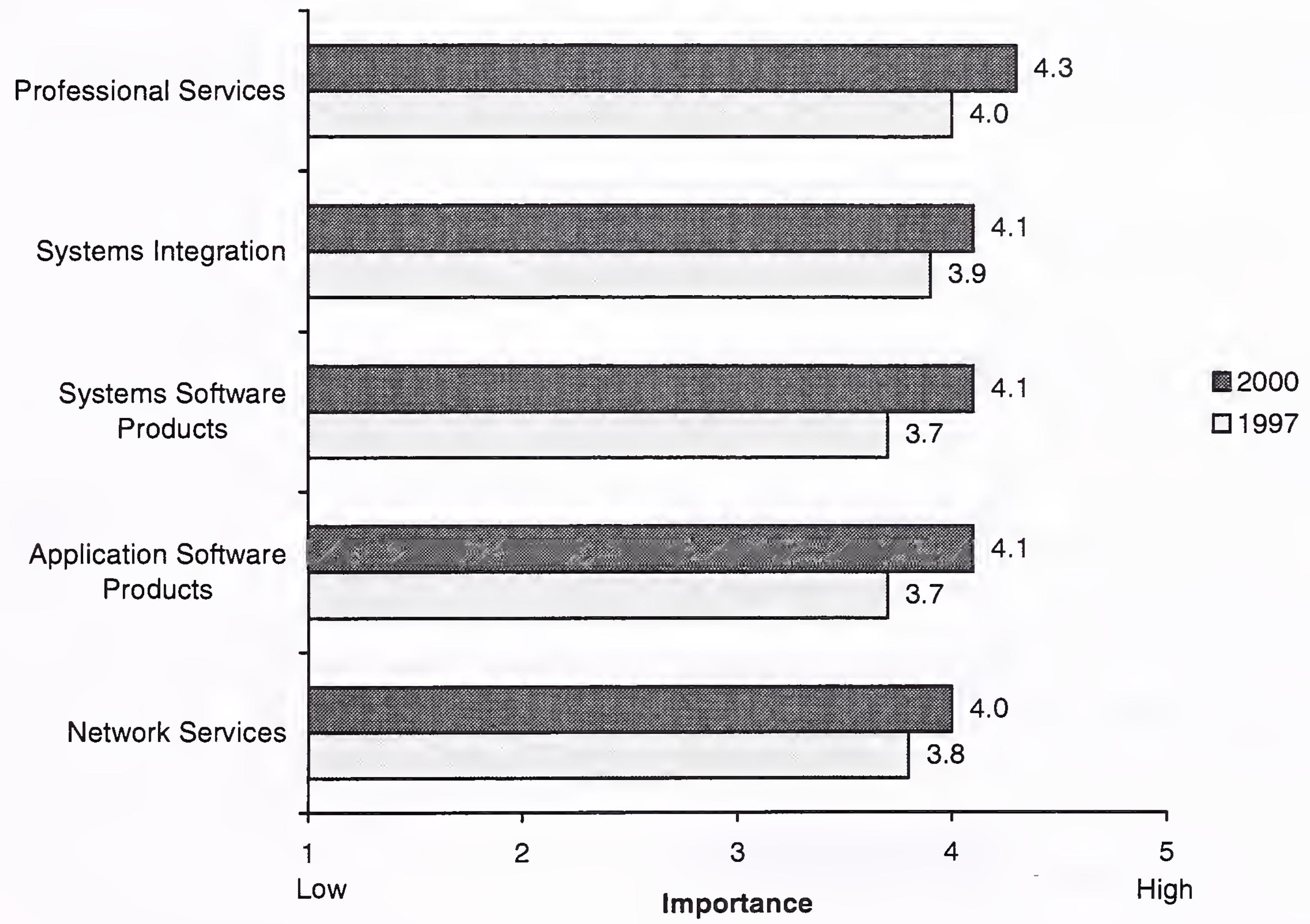
Source: INPUT

But, as CC&B is a key market differentiator, telecommunications providers are not familiar with any CC&B related turnkey systems.

The need for professional services and systems integration has never been greater among traditional PTTs. These organisations are currently migrating their custom-based systems. They must integrate new software products that are more flexible and scaleable than their past tailored solution. Exhibit IV-10 illustrates their major needs compared to the European average shown on Exhibit IV-9.

Exhibit IV-10

Traditional PTTs' Areas with Highest Need for External Services - Europe 1997-2000



Sample of 12 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

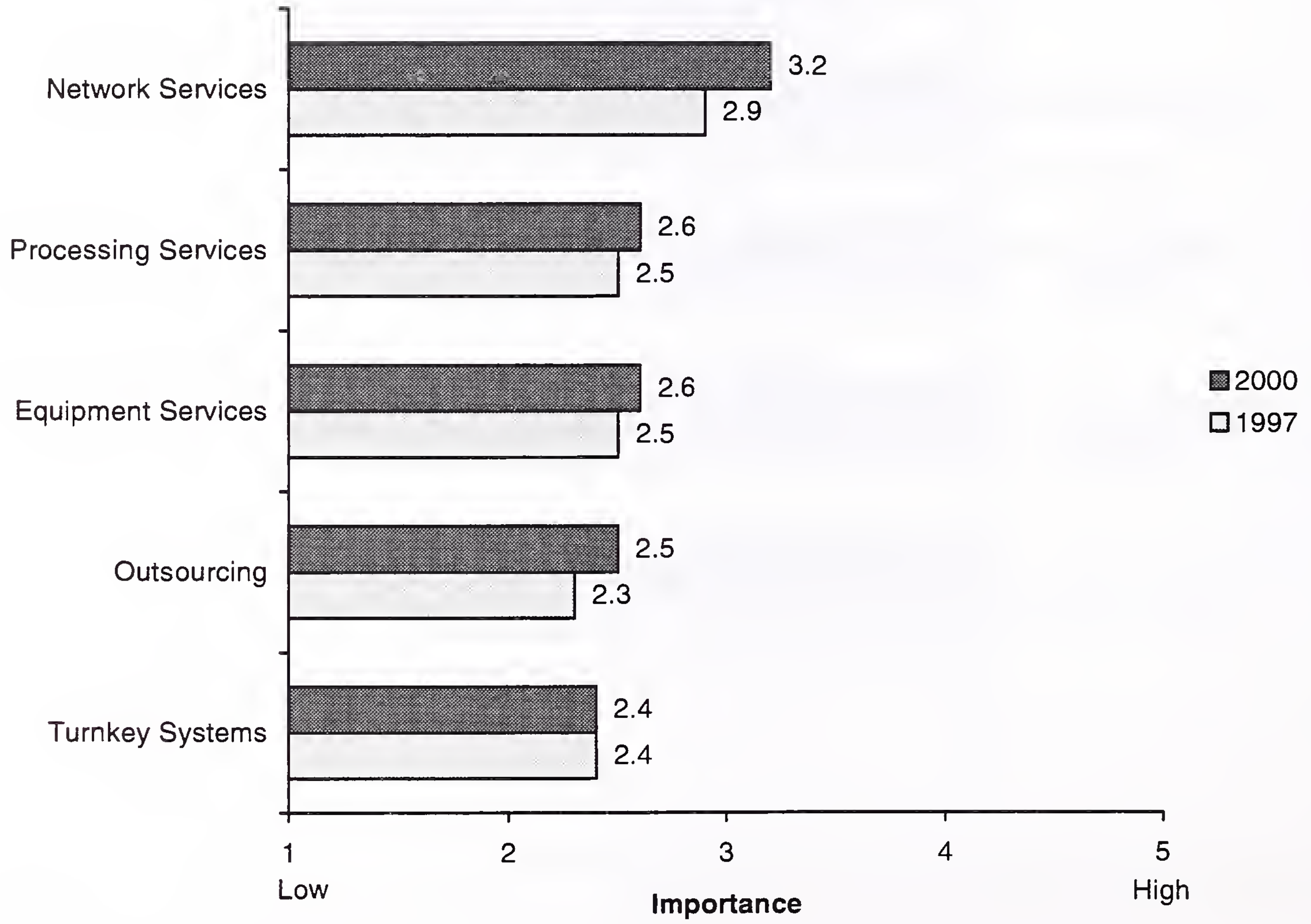
C
Mission Critical Support Offers Opportunities for IT Vendors

Systems operations, application management and business operations will remain in-house for most operators except for new entrants (CATV and ISPs) who are starting their operations without any heavy legacy systems. Alternatives operators and ISPs are particularly prone to outsource their front-office activities such as their call centre organisation or their front line help-desk.

New services such as mission critical support will create new opportunities for vendors by the year 2000. Equipment services and outsourcing should achieve a higher acceptance in the market.

Exhibit IV-11

Areas with Lowest Need for External Service - Europe 1997-2000



Sample of 38 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

D

Technology Integration and Consulting Services will be Significant

Some CC&B solutions already allow providers' customer representatives to deal more easily with incoming calls and address customer concerns online by more closely integrating them with billing, provisioning and marketing. Most of these new processes are technology-enabled using, for example, TCP/IP implementation, datawarehousing and object-based technology to build solutions from standard components.

Exhibit IV-12 summarises the major technology changes that will impact providers' CC&B solutions.

Exhibit IV-12

Major IT Changes within CC&B Solutions
Telecommunications Services Providers' - Europe 1997

- Internet / Intranet
- RDBMS and Datawarehousing
- On-line Electronic Delivery & Payment

Source: INPUT

Most providers require assistance when choosing the technology that will support their CC&B system and when integrating it with their existing platforms. There are huge opportunities for IT vendors delivering technology consultancy and integration services to support providers in their selection and purchase process.

E
Vendor Selection and Evaluation

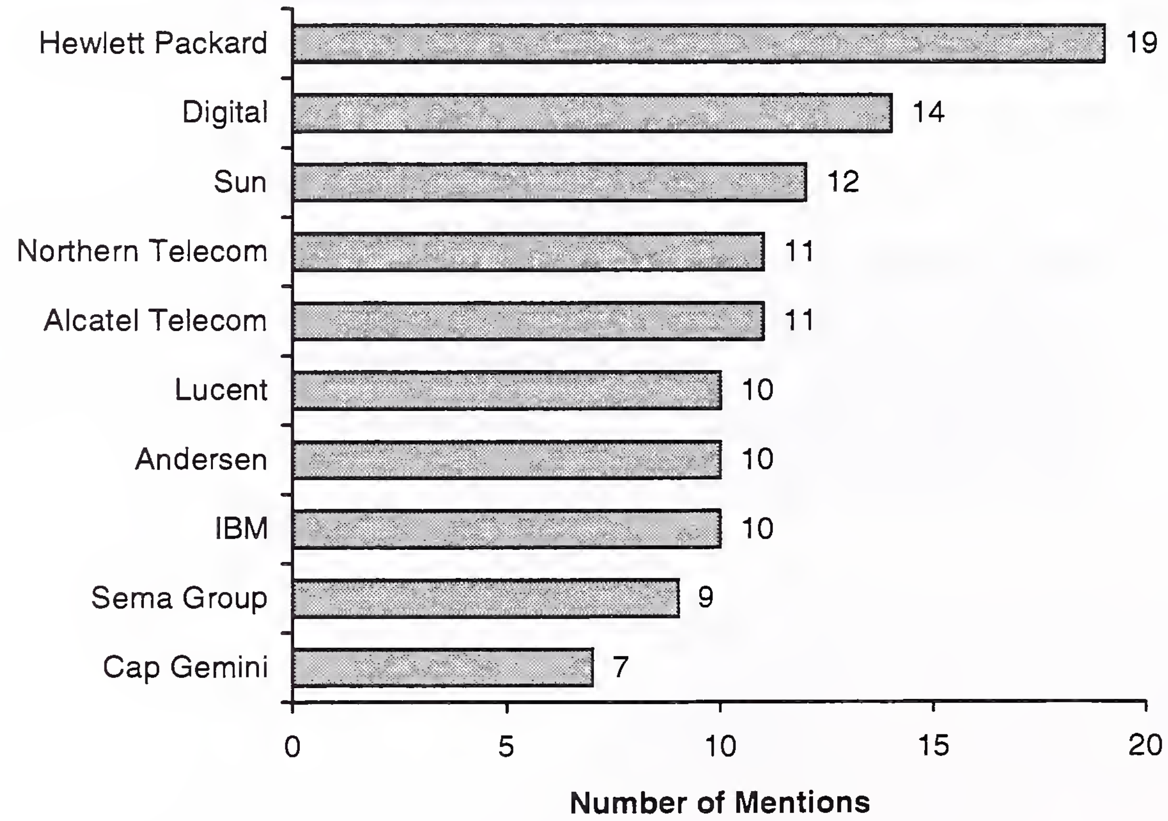
IT services vendors are struggling with four basic elements that services providers need:

- Data collection solutions
- Integration with the myriad of applications that already exist within telecommunications providers' information systems
- Ability to invoice multiple services on a single bill
- To improve customer services through flexible and up-to-date customer information services and management.

Exhibit IV-13 lists the IT vendors perceived to be best positioned to provide CC&B solutions.

Exhibit IV-13

Major Mentions of IT Services Vendors - Europe, 1997

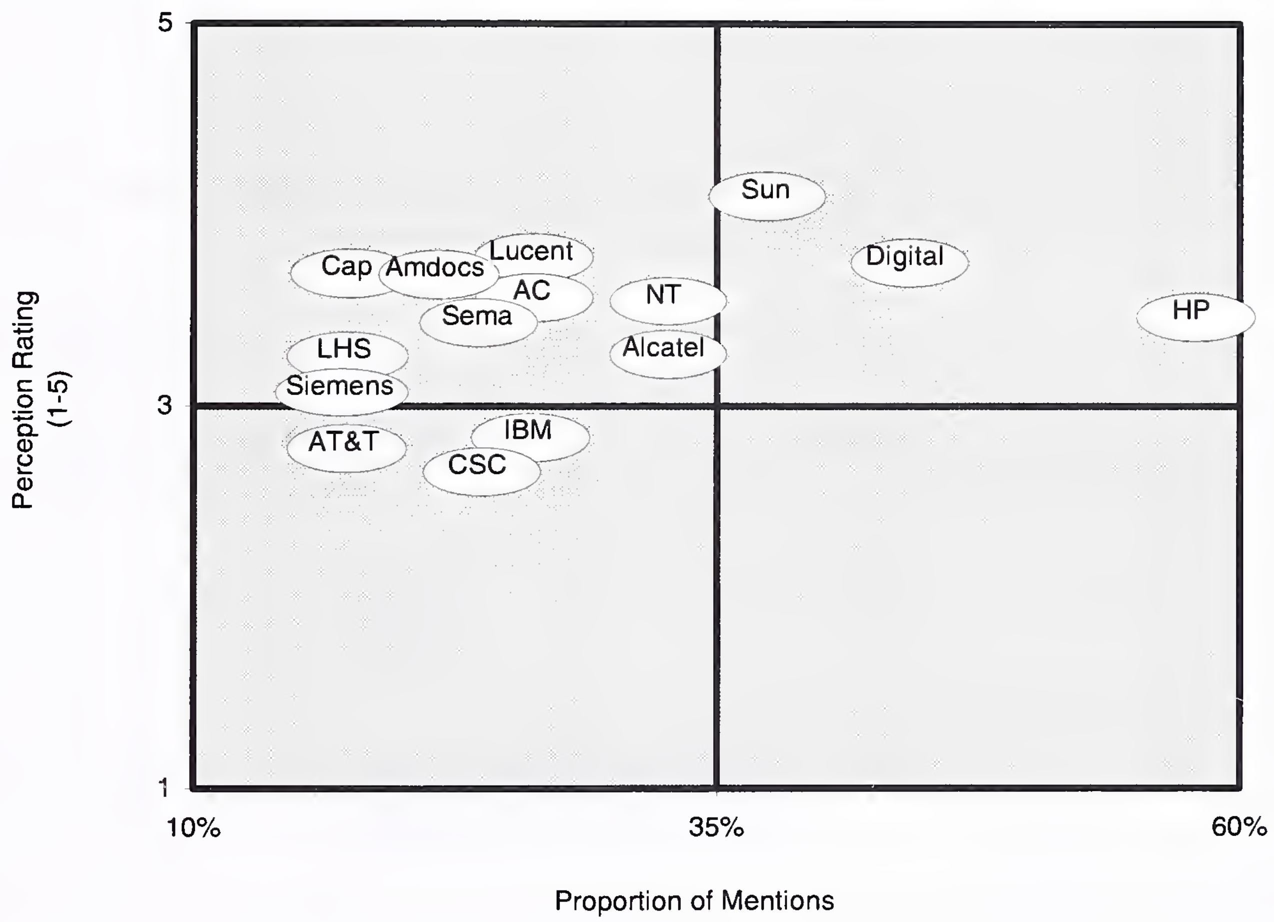


Sample of 38 Telecommunications Providers *Source: INPUT*

Exhibit IV-14 positions major IT vendors according to the number of mentions and the perception ratings from telecommunications services providers.

Exhibit IV-14

European Telecommunications Services Providers' Perception of IT Services Vendors (prompted), 1997



AC: Andersen Consulting; Alcatel: Alcatel Telecom Software & Services; NT: Northern Telecom
Sample of 38 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

Among the major mentions:

- Alcatel Telecom, Northern Telecom and Siemens are listed for switching equipment and ACDs
- Amdocs is known for customer care applications
- Andersen is used for billing and consultancy services
- AT&T is mentioned for CC&B expertise

- Cap Gemini is listed for professional services, systems integration, technical assistance and customer care solutions
- CSC appears for consultancy services and systems integration
- Digital and HP is mentioned for hardware equipment (middleware, servers and technology) and customer care solutions
- IBM is recognised for its hardware IT equipment and network services provision
- LHS is quoted for their CC&B software products
- Lucent Technologies is positioned on ACDs equipment and systems support
- Sema provides systems integration, billing and customer care
- Sun is mentioned for IT systems (servers).

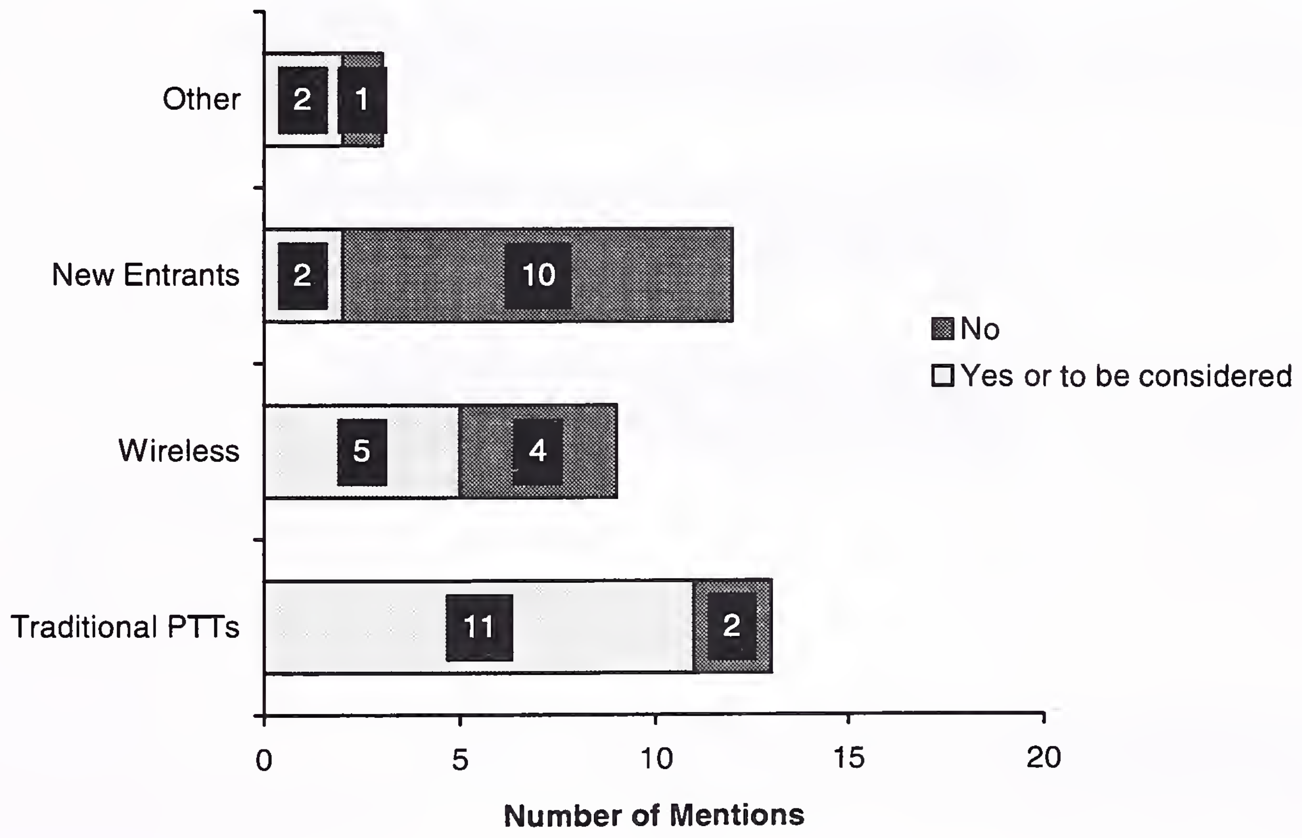
Exhibit IV-15 illustrates the different level of openness to a partnership by type of telecommunications service provider.

Almost all traditional PTTs are considering such a partnership to migrate and develop their CC&B systems. Their major needs concern business process integration.

On the other hand, the majority of new entrants do not intend to create such a relationship. They prefer to build their own CC&B solution based on software products modules eventually with the assistance of external resources, but are not considering any long term partnerships in this area. Moreover, they are concerned that an external partner might deliver part of their CC&B solutions to their competitors. Those few entrants which have already selected an external solutions are preferring a strong relationship with their partner (see Exhibit IV-19, page 64).

Exhibit IV-15

Level of Openness to a Partnership with an IT Services Vendor by Service Provider Type - Europe 1997

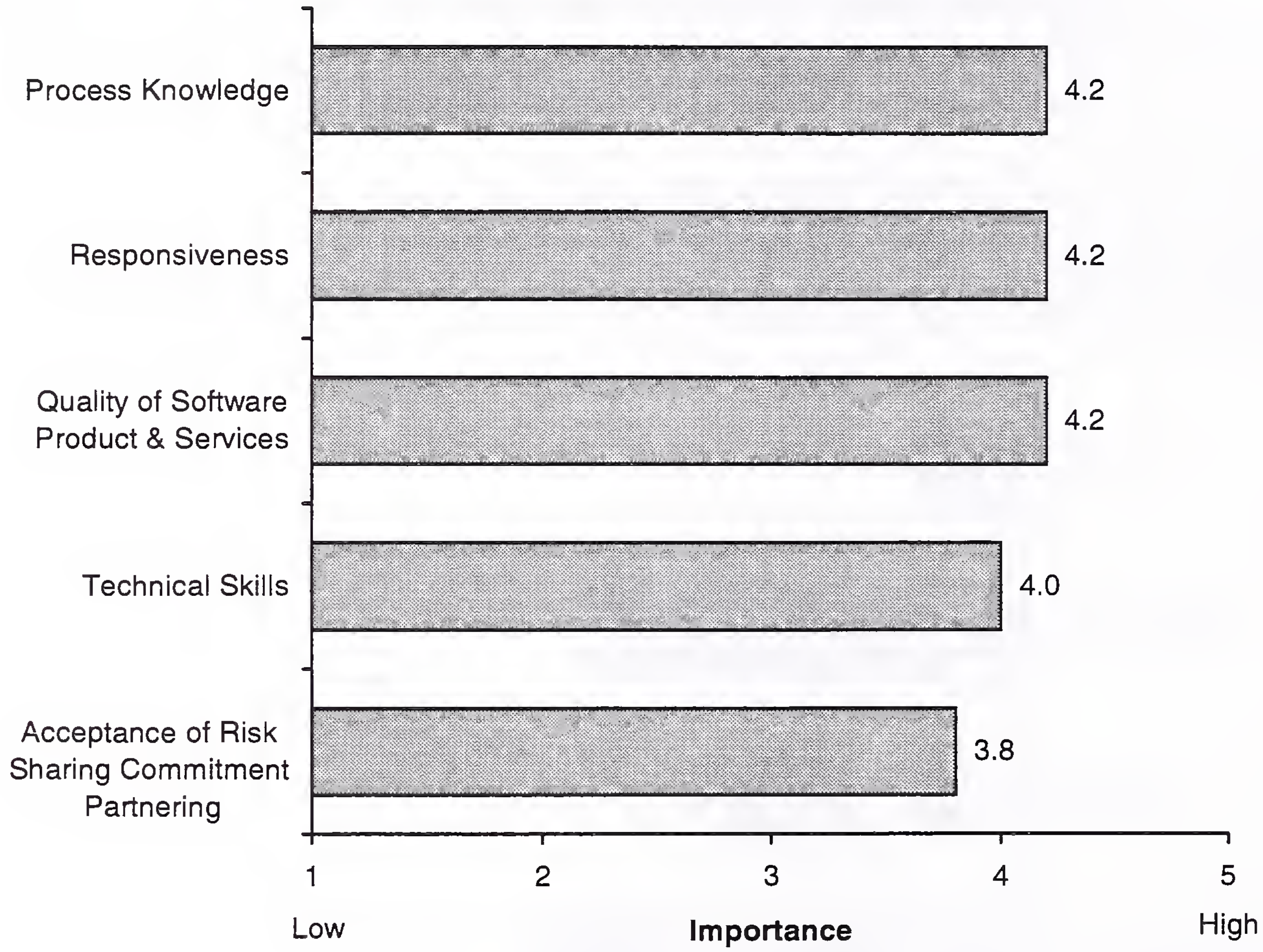


Sample of 38 Telecommunications Providers *Source: INPUT*

The process of developing customer support and sophisticated billing systems requires less industry knowledge and more design and integration expertise. However, Exhibit IV-16 shows that industry knowledge, and especially process knowledge, is still crucial when organisations choose an IT vendor to assist and support them in their CC&B activities. To provide just-in-time services, the level of responsiveness in terms of reactivity and ability to rapidly match business needs is another critical element for operators.

Exhibit IV-16

Major Reasons for Choosing IT Services Vendors - Europe 1997



Sample of 38 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

But, the major reasons for choosing IT services vendors vary according to the nature of services providers' business. Exhibits IV-17, IV-18 and IV-19 summarise the differing selection criteria by type of organisation.

Exhibit IV-17

Major Reasons for Choosing IT Services Vendors Traditional PTTs - Europe 1997

- Responsiveness
- Technical Skills
  Quality of Software Product & Services
- Process Knowledge

Source: INPUT

Exhibit IV-18

Major Reasons for Choosing IT Services Vendors Wireless Providers - Europe 1997

- Process Knowledge
- Quality of Software Product & Services
- Responsiveness and Technical Skills

Source: INPUT

Exhibit IV-19

Major Reasons for Choosing IT Services Vendors New Entrants - Europe, 1997

- Process Knowledge
- Acceptance of Risk Sharing Commitment to Partnering
- Quality of Software Product & Services and Responsiveness

Source: INPUT

Completing the evaluation of telecommunications providers' vendors shown on Exhibits IV-13 and IV-14, Exhibit IV-20 lists major IT services vendors acting in the CC&B software and services market together with their areas of expertise.

Exhibit IV-20

Major CC&B Solutions and Services Vendors – Europe, 1997

Last Update: 06/97	General Overview			Competencies & Capabilities											
Vendor	Country	URL Address	Major Markets	Customer Care Capabilities	Billing Capabilities	Professional Services	Systems Integration	Turnkey Systems	Network Services	Operational Services	Processing Services	Customer Services	Packaged Software Products	Customer-Specific Software Solution	Datawarehousing Datamining
Alcatel Telecom	FR	http://www.alcatel.com	All	✓		✓	✓	✓					✓		✓
Amdocs	US	http://www.amdocs.com	Mobile	✓	✓								✓	✓	✓
Andersen Consulting	US	http://www.andersen.com	All	✓	✓	✓	✓	✓		✓			✓	✓	✓
AMS	US	http://www.amsinc.com	All	✓	✓	✓	✓	✓		✓			✓	✓	✓
AT&T	US	http://www.att.com	All	✓	✓	✓							✓		✓
Atos	FR	http://www.atos-group.com	All	✓			✓			✓	✓				✓
Bull/integris	FR	http://www.integris.com	All	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
CableData	US	http://www.cabledat.com	Cable	✓		✓						✓	✓	✓	✓
Cap Gemini	FR	http://www.cgs.com	All	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓
CBIS	US	http://www.cbis.com	All	✓	✓						✓		✓	✓	
CSC	US	http://www.csc.com	All	✓	✓	✓	✓			✓					
Debis	GY	http://www.debis.de	All	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Digital	US	http://www.digital.com	Mobile	✓	✓	✓	✓	✓	✓	✓		✓			✓
EDS	US	http://www.eds.com	Mobile	✓	✓	✓	✓			✓					✓
Ericsson HP Telecom	-	-	Fixed & Mobile	✓	✓	✓	✓					✓			
Generic Technology	UK	-	All	✓	✓	✓							✓	✓	
GTE Data Services	US	http://www.gte.com	All	✓	✓	✓			✓			✓	✓	✓	
IBM	US	http://www.ibm.com	All	✓		✓	✓		✓	✓		✓			✓
ICL Telecomms	UK	http://www.icl.com/telecoms	All	✓	✓	✓		✓		✓			✓	✓	✓
Inference	US	http://www.inference.com	All	✓								✓	✓	✓	
ITS	-	http://www.cits.com	Voice & Data	✓		✓	✓			✓		✓			
Kenan Systems	US	http://www.kenan.com	All	✓	✓	✓							✓	✓	
Kingston-SCL	UK	http://www.kscl.com	All	✓	✓	✓	✓	✓			✓		✓		
LHS	GY	-	Mobile	✓	✓								✓	✓	
Lightbridge	US	http://www.ligthbridge.com	Mobile	✓	✓	✓	✓				✓		✓		✓
Logica	UK	http://www.logica.com	All	✓	✓	✓	✓						✓	✓	✓
Moscom (GBS)	US	http://www.moscom.com	Fixed		✓										
Saville Systems	Canada	-	All	✓	✓	✓	✓					✓	✓	✓	
Sema Group	UK	http://www.sema.com	All	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Siemens Nixdorf	GR	http://www.sni.de	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sofrecom	FR	http://www.francetelecom.fr	All	✓	✓	✓						✓	✓	✓	✓
Steria	FR	http://www.steria.fr	All		✓	✓	✓			✓					
Syseca	FR	http://www.thomson.fr	Mobile & Other	✓	✓	✓	✓		✓	✓			✓	✓	
TECSI	FR	http://www.tecsi.com	All	✓	✓	✓	✓	✓	✓				✓	✓	✓
Texas Instrument	US	http://www.ti.com	All	✓	✓	✓						✓	✓		
Vantive Corporation	US	http://www.vantive.com	All	✓		✓	✓						✓	✓	

Source: INPUT

To better position each of the IT services vendors previously mentioned, Exhibit IV-21 details their major client references regarding the CC&B software and services market.

Exhibit IV-21

Major CC&B Vendor Contracts Awards – Europe 1997 (1)

IT Vendor	Telecommunications Provider	Segment	Country
AMS	Cellnet	Mobile	UK
AMS	PTT Telecom	All	Netherlands
AMS	Telia Mobitel	Mobile	Sweden
AMS	Swiss Telecom PTT	All	Switzerland
AMS	Mannesmann Mobilfunk (MMO)	Mobile	Germany
AMS	Belgacom Mobile	Mobile	Belgium
Alcatel Telecom	Bouygues	Mobile	France
Alcatel Telecom	Telenor	Fixed	Norway
Alcatel Telecom	PTT Lithuania	All	Lithuania
Andersen Consulting	Telefonica	All	Spain
Andersen Consulting	Telecom Italia	All	Italy
Andersen Consulting	Belgacom	All	Belgium
AT&T	Mannesmann Mobilfunk (MMO)	Mobile	Germany
Bull/Integris	CGSAT	Local	Hungary
Bull/Integris	Deltav	Cable Telephony	Hungary
Bull/Integris	Bresnan Communications	Cable Telephony	Poland
Bull/Integris	France Telecom	All	France
Bull/Integris	Deutsche Telekom	All	Germany
Bull/Integris	Telia	All	Sweden
Bull/Integris	SITA	Airlines Telephony	-
CableData	Telekable	CATV	Netherlands
CableData	Lyonnaise Cable	CATV	France

Source: INPUT

Exhibit IV-21

Major CC&B Vendor Contracts Awards – Europe 1997 (2)

IT Vendor	Telecommunications Provider	Segment	Country
Cap Gemini	NC	NC	Lithuania
Cap Gemini	Telenor	All	Norway
Cap Gemini	France Telecom	Inter-City Telephony	France
Cap Gemini	France Telecom Mobile	Mobile	France
Cap Gemini	Deutsche Telekom	All	Germany
Cap Gemini	Telia	All	Sweden
Cap Gemini	Telecom Italia	All	Italy
Cap Gemini	Bouygues	Mobile	France
CBIS	E-Plus	Mobile	Germany
CBIS	Swiss PTT	All	Switzerland
CBIS	Mercury One-2-One	Mobile	UK
Coopers & Lybrand	SFR	Mobile	France
CSC	Belgacom	All	Belgium
Debis	E-Plus	Mobile	Germany
Digital	Telenor	All	Norway
Digital	France Telecom Mobile	Mobile	France
Digital	OPI Omnitel	Mobile	Italy
Digital	Telia	Mobile	Sweden
Digital	Sonofon	Mobile	Denmark
Digital	TIM	Mobile	Italy
Digital	T-Mobil	Mobile	Germany
Digital	Westel	Mobile	Hungary

Source: INPUT

Exhibit IV-21

Major CC&B Vendor Contracts Awards – Europe 1997 (3)

IT Vendor	Telecommunications Provider	Segment	Country
EDS	Telefonica	All	Spain
EDS	E-Plus	Mobile	Germany
EDS	Telecom Italia	All	Italy
EDS	Polska Telefonia Kormokowa	All	Poland
EDS	Westel Radiotelefon KFT	Mobile	Hungary
Finsiel	Telecom Italia	All	Italy
Generic technology	Ionica	Fixed Line & Mobile	UK
Generic technology	Scottish Telecom	Mobile	UK
Generic technology	Mercury One-2-One	Mobile	UK
GTE Data Services	PTT Telecom	All	Netherlands
IBM Global Services	Transpac	Data	France
IBM Global Services	Entreprise de Postes & Telecom.	All	Luxembourg
IBM Global Services	France Telecom Mobile Data	Mobile	France
IBM Global Services	Nynex CableComms	Cable	UK
ICL	BT	All	UK
ICL	Mercury Communications	All	UK
ICL	TeleWest	CATV	UK
ICL	Scottish Telecom	All	UK
ICL	Telefonica	All	Spain
Inference	BT	All	UK
Inference	Mercury Communications	All	UK
Inference	Orange	Mobile	UK
Inference	Deutsche Telekom	All	Germany

Source: INPUT

Exhibit IV-21

Major CC&B Vendor Contracts Awards – Europe 1997 (4)

IT Vendor	Telecommunications Provider	Segment	Country
Kenan	Casema kabeltelevesie	Cable	Netherlands
Kenan	BT	All	UK
Kenan	Siris	ISP	France
Kenan	Viag Interkom	Alternative Provider	Germany
Kingston-SCL	France Telecom Mobile	Mobile	France
Kingston-SCL	Radiolinja	Mobile	Finland
Kingston-SCL	TMN	Mobile	Portugal
Kingston-SCL	Estonia Mobile Telephone	Mobile	Estonia
Kingston-SCL	LuxGSM	Mobile	Luxembourg
Kingston-SCL	Belcel	Mobile	Belarus
Kingston-SCL	Panafon	Mobile	Greece
Kingston-SCL	Eircell	Mobile	Ireland
Kingston-SCL	Omnitel	Mobile	Lithuania
Logica	Telia	All	Sweden
Logica	Ionica	Alternative Provider	UK
Logica	BT	All	UK
Logica	Energis	Alternative Provider	UK
Moscom	NC	NC	Germany
Saville Systems	Energis	Telephony	UK
Sema Group	Transpac	Mobile	France
Sema Group	Bouygues Telecom	Mobile	France
Sema Group	DeTeMobil	Mobile	Germany
Sema Group	Retevision	Telephony	Spain
Sema Group	Lyonnaise Cable	CATV	France

Source: INPUT

Exhibit IV-21

Major CC&B Vendor Contracts Awards – Europe 1997 (5)

IT Vendor	Telecommunications Provider	Segment	Country
Siemens Nixdorf	HPT	Mobile	Croatia
Siemens Nixdorf	MobilTel	Mobile	Bulgaria
Siemens Nixdorf	OPTV	Mobile	Austria
Siemens Nixdorf	HPT	Mobile	Croatia
Siemens Nixdorf	Telecom Italia	Fixed Line	Italy
Siemens Nixdorf	Deutsche Telekom	Fixed Line	Germany
Sofrecom	NC	NC	Russia
Stéria	SFR	Mobile	France
Stéria	Swiss Telecom PTT	All	Switzerland
Stéria	SITA	All	Worldwide
Stéria	Cegetel	Telephony	France
Stéria	France Telecom	All	France
Syseca	SFR	Mobile	France
Syseca	Telefonica Moviles	Mobile	Spain
Texas Instrument	TeleWest	CATV	UK
Texas Instrument	Energis	Telephony	UK
Texas Instrument	Deustche Telekom	All	Germany
Texas Instrument	BT	All	UK
Texas Instrument	DeTeMobil	Mobile	Germany
Texas Instrument	Telecom Finland	All	Finland
Texas Instrument	Telecom Portugal	All	Portugal
Texas Instrument	Mercury Communications	All	UK
Unilog	France Telecom Mobile	Mobile	France
Vantive	France Telecom	NC	France
Vantive	Orange	Mobile	UK

Source: INPUT

V

Major Regional Market Analysis

A
Southern Europe

Southern Europe interviewees are:

- 12 French operators
- 2 Belgian services providers.

50% of companies interviewed have only national business. Five operators cover almost all telecommunications services, four only provide mobile telephony, two are Internet services providers and one offers CATV services. Only five cover the domestic and SOHO markets.

1. Telecommunications Services Providers' Major Objectives are to Better Understand Customer Usage

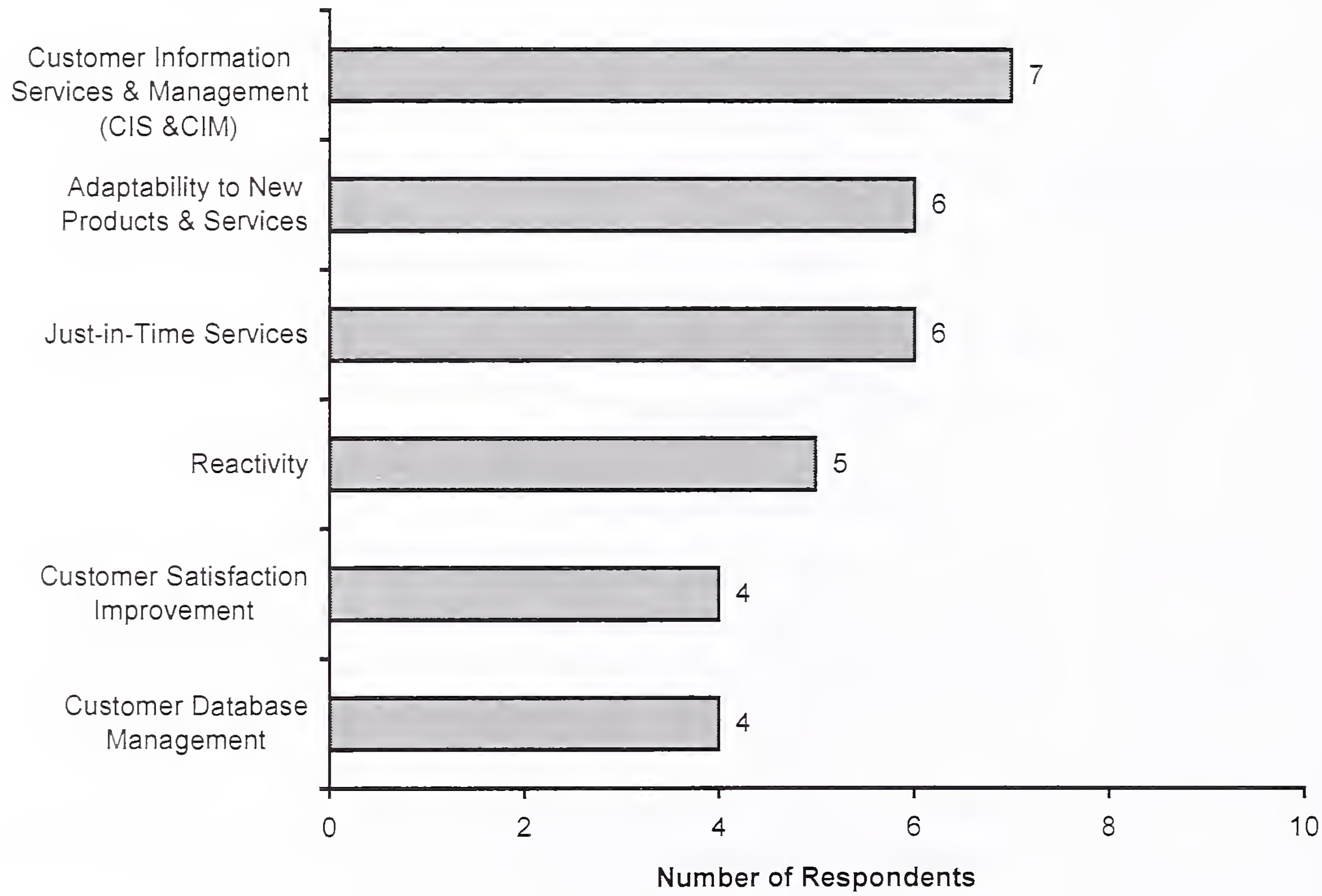
Southern European telecommunications providers argue that they have to improve their understanding of customer services usage. In this respect, Customer Information Services and Management (CIS & CIM) provision appears to be their most appropriate answer.

Delivering new information services allows them to target new subscribers, especially in the competitive wireless market. Future buying attitudes have to be rapidly detected through effective customer database management systems.

Exhibit V-1 shows that although CIS and CIM are the most important challenges, another major issue facing telecommunications organisations is their capacity to offer adequate just-in-time services.

Exhibit V-1

Major CC&B Challenges Facing Southern European Telecommunications Services Providers by the Year 2000



Sample of 14 Telecommunications Providers *Source: INPUT*

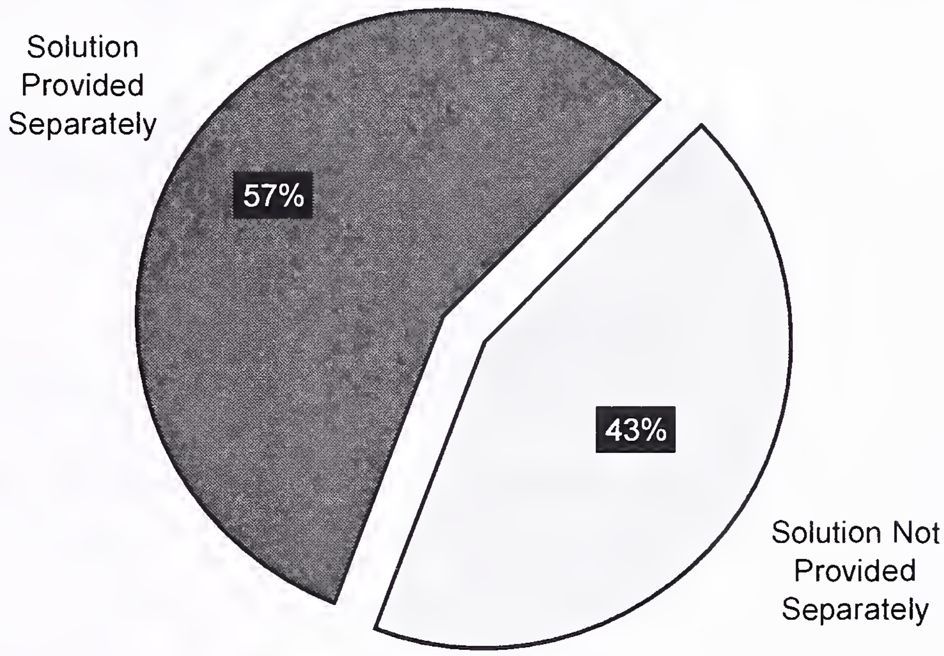
2. Major Telecommunications Services Providers are Willing to Use CC&B Integrated Solutions

Southern European telecommunications companies are willing to use an integrated solution built with dissociated components. According to them, both the approach and the IT infrastructure to implement are to be considered as a global process.

Exhibit V-2 illustrates that 57% of Southern European operators have their current CC&B solution provided separately. Only 43% of them have already implemented a single solution. However, 57% out of the total sample expect and/or would like to have a single or integrated solution.

Exhibit V-2

Telecommunications Services Providers' Current CC&B Solution Southern Europe 1997



Sample of 14 Telecommunications Providers *Source: INPUT*

3. IT Systems are to Migrate to Take into Account New Technologies and Processes

By the year 2000, IT systems of Southern European telecommunications organisations will definitely change to take into account new technologies and processes such as trouble shooting, lead-time to connect, client profiling, real-time customer information services and reporting, product customisation, one-to-one billing, time-to-invoice, fraud management, on-line secured payment, etc.

In this respect, they mention that they will:

- Reconsider and/or even migrate their current legacy systems
- Industrialise standard processes for cost optimisation.

Exhibit V-3 lists the key technology areas of major importance to Southern European telecommunications providers.

Exhibit V-3

Telecommunications Services Providers' Major IT Changes within CC&B Solutions - Southern Europe 1997

- Internet / Intranet
- RDBMS and Datawarehousing
- Client-Server Systems for Customer Access

Source: INPUT

In Southern Europe, migration to client-server environments has not gained widespread acceptance. Some operators are disappointed by this architecture and its related capacities. With distributed computing, there seem to be many more points of failure than with other types of architectures.

They prefer to opt for large central database operations directly connected to their Intranets.

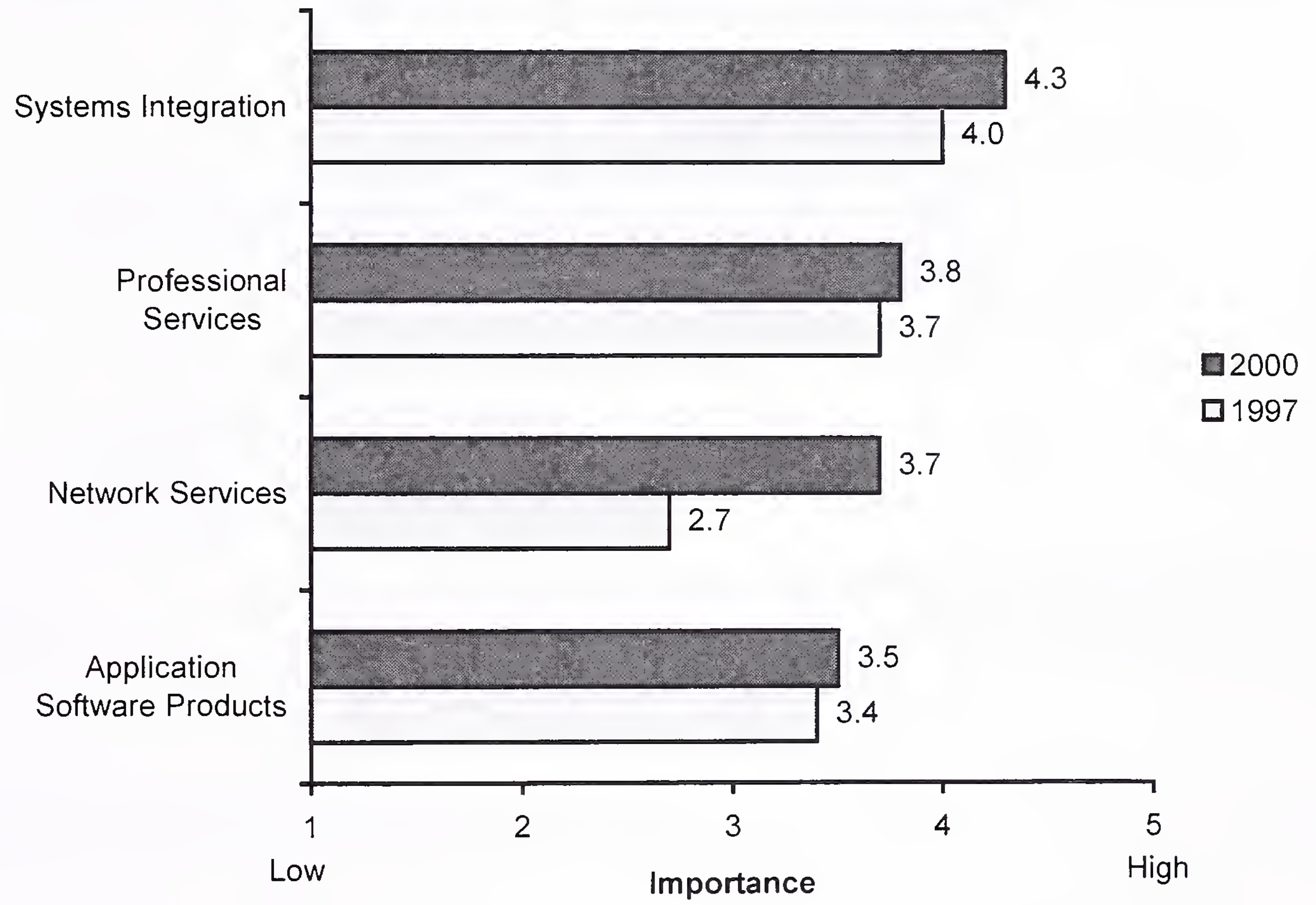
4. Telecommunications Service Providers have Growing Needs for Systems Integration and Professional Services

Exhibit V-4 and V-5 detail the external services on which Southern European telecommunications providers intend to spend their budget.

A high level of professional services and systems integration are subcontracted and will continue to be subcontracted.

Exhibit V-4

Areas with Highest Need for External Services - Southern Europe 1997-2000

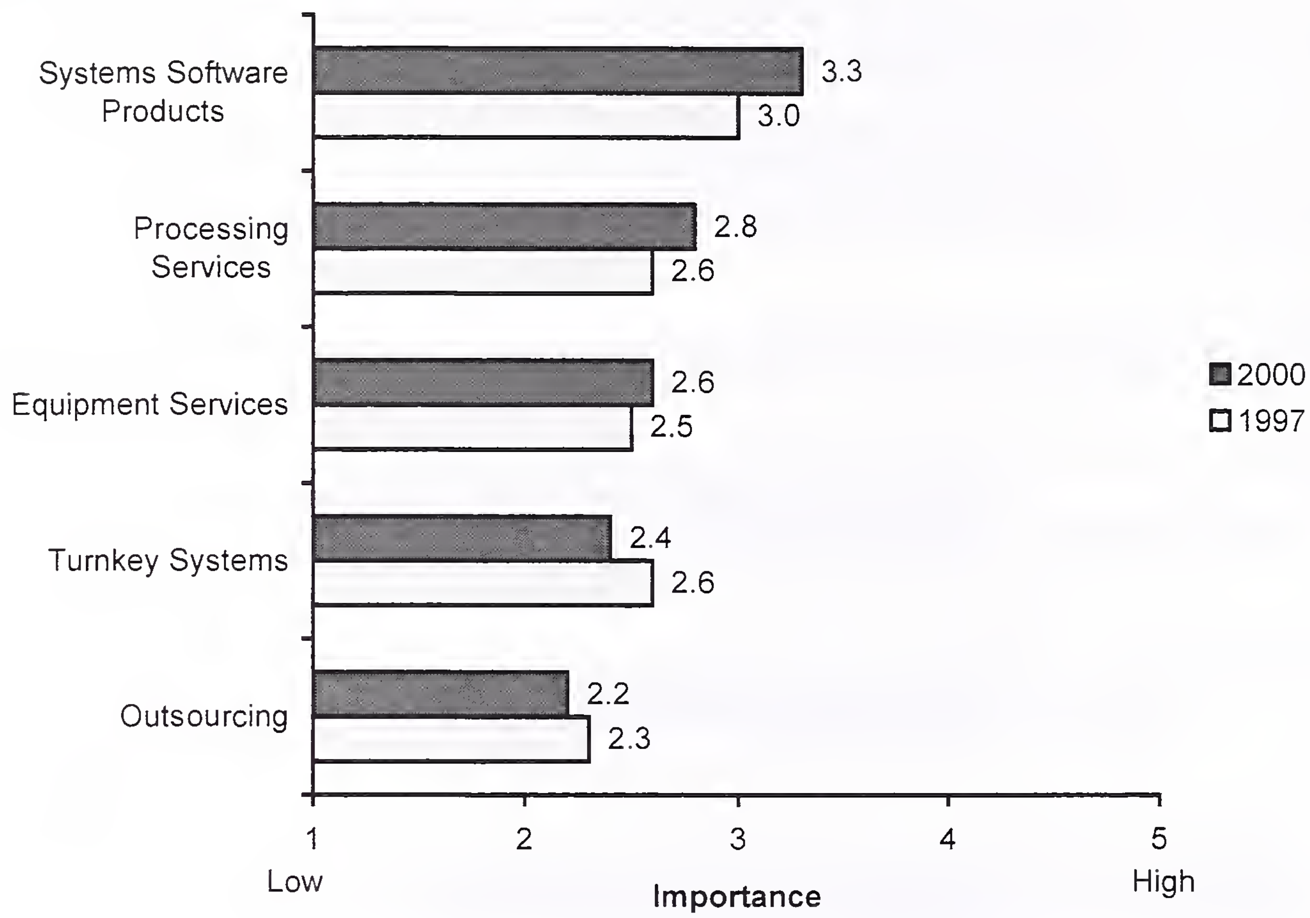


Sample of 14 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

Exhibit V-5

Areas with Lowest Need for External Services - Southern Europe 1997-2000



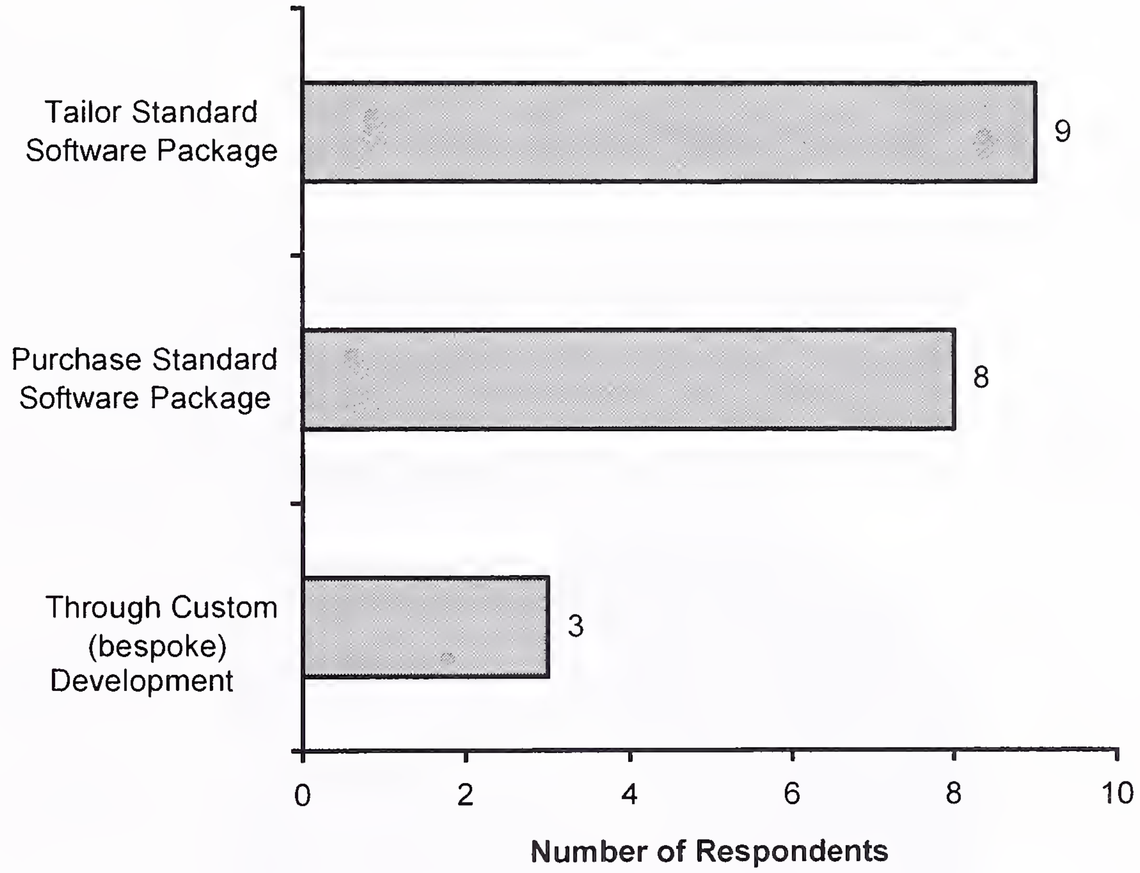
Sample of 14 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

As shown in Exhibit V-6, Southern European telecommunications operators have growing needs for application and systems software products. Most applications developments are to be subcontracted or shared with partners.

Exhibit V-6

Level of Software Packages Purchase - Southern Europe 1997



Sample of 14 Telecommunications Providers - Multiple Choice *Source: INPUT*

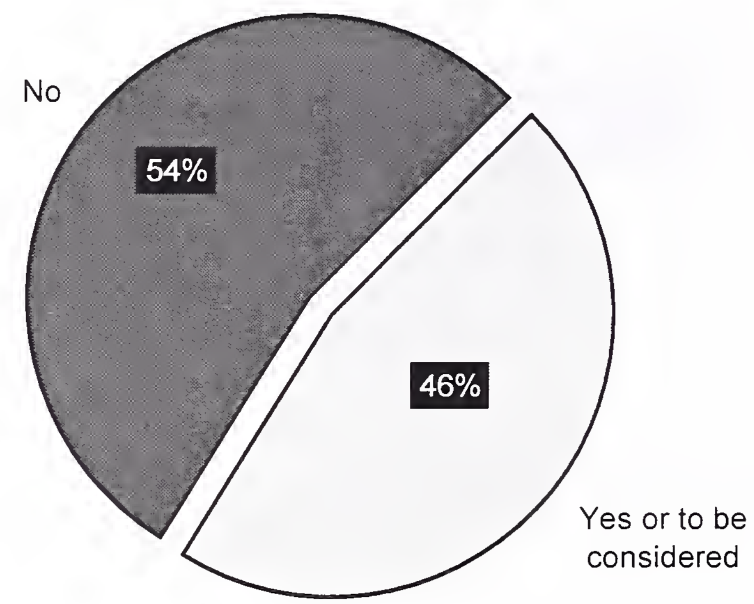
Nearly 50% of Southern European providers interviewed envision partnerships to develop their CC&B solution.

New entrants consider partnerships to develop cost sharing because they have no time to do custom development. They are looking for partners eager to develop non-proprietary, common solutions and to share related costs. Scopes of alliances when mentioned are essentially:

- Call centre operations
- Integration support
- Requirements analysis.

Exhibit V-7

Level of Openness to a Partnership with IT Services Vendors - Southern Europe 1997



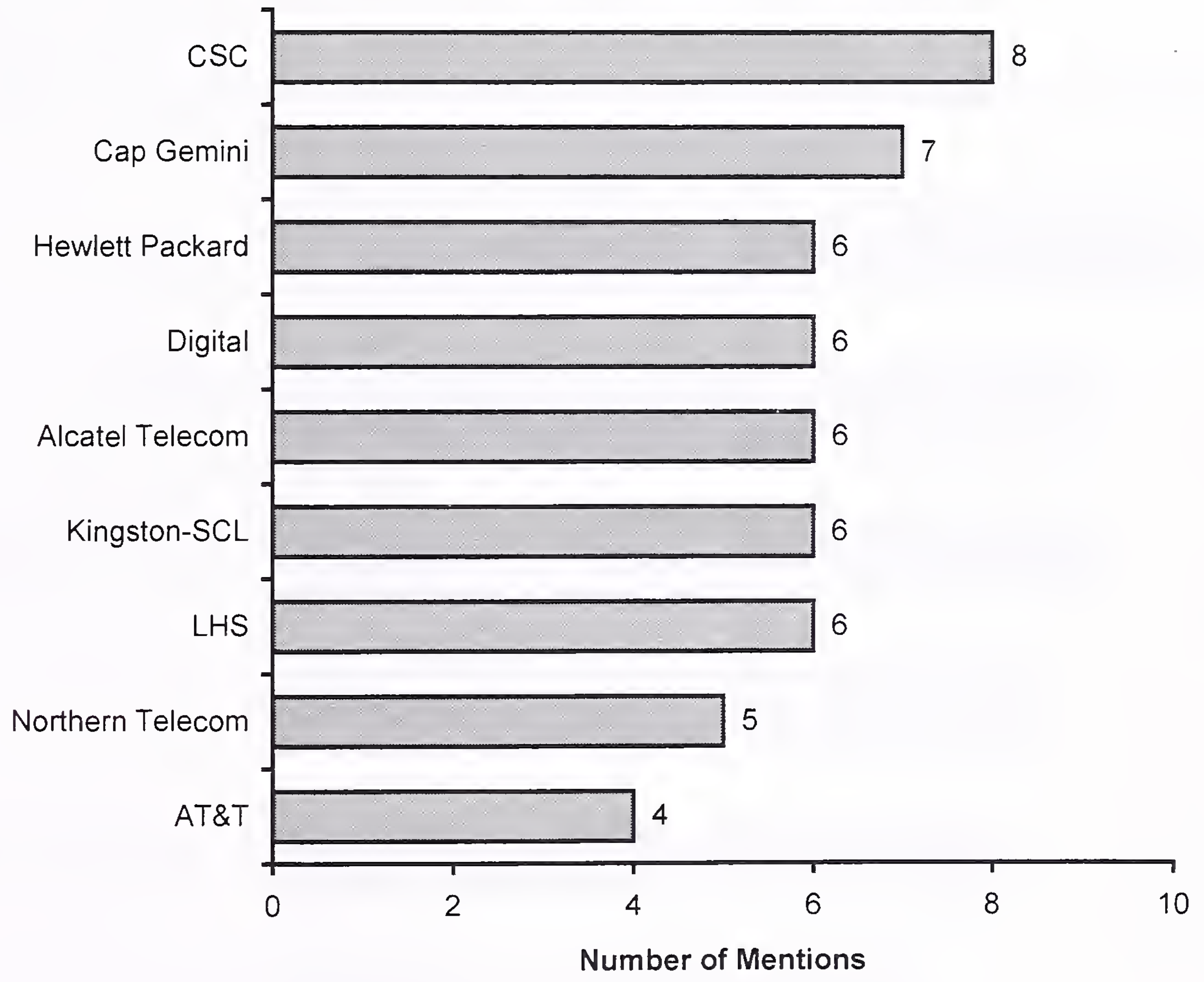
Sample of 14 Telecommunications Providers *Source: INPUT*

5. Perception of IT Services Vendors

In Southern Europe, most telecommunications services providers do not see any major vendor best positioned to provide CC&B solutions on the market. Questioned on what will be the most suitable services vendor that can help them in the implementation of their CC&B solution, they cite services companies as well as hardware vendors without making any distinction in the way they deliver their solution. Exhibit V-8 presents major vendor mentions for this region.

Exhibit V-8

Major Mentions of IT Services Vendors - Southern Europe 1997



Sample of 14 Telecommunications Providers *Source: INPUT*

Major vendors known are:

- CSC for consultancy services and integration systems
- Cap Gemini for systems integration, technical assistance, customer care solutions

- HP and Digital for hardware equipment (middleware, servers, technology) and customer care solution
- Alcatel Telecom and Northern Telecom for switching equipment (inc. PBX systems) and ACDs
- Kingston-SCL and LHS for CC&B software products
- AT&T Solutions for CC&B expertise.

Other IT services vendors that show up on the rating are:

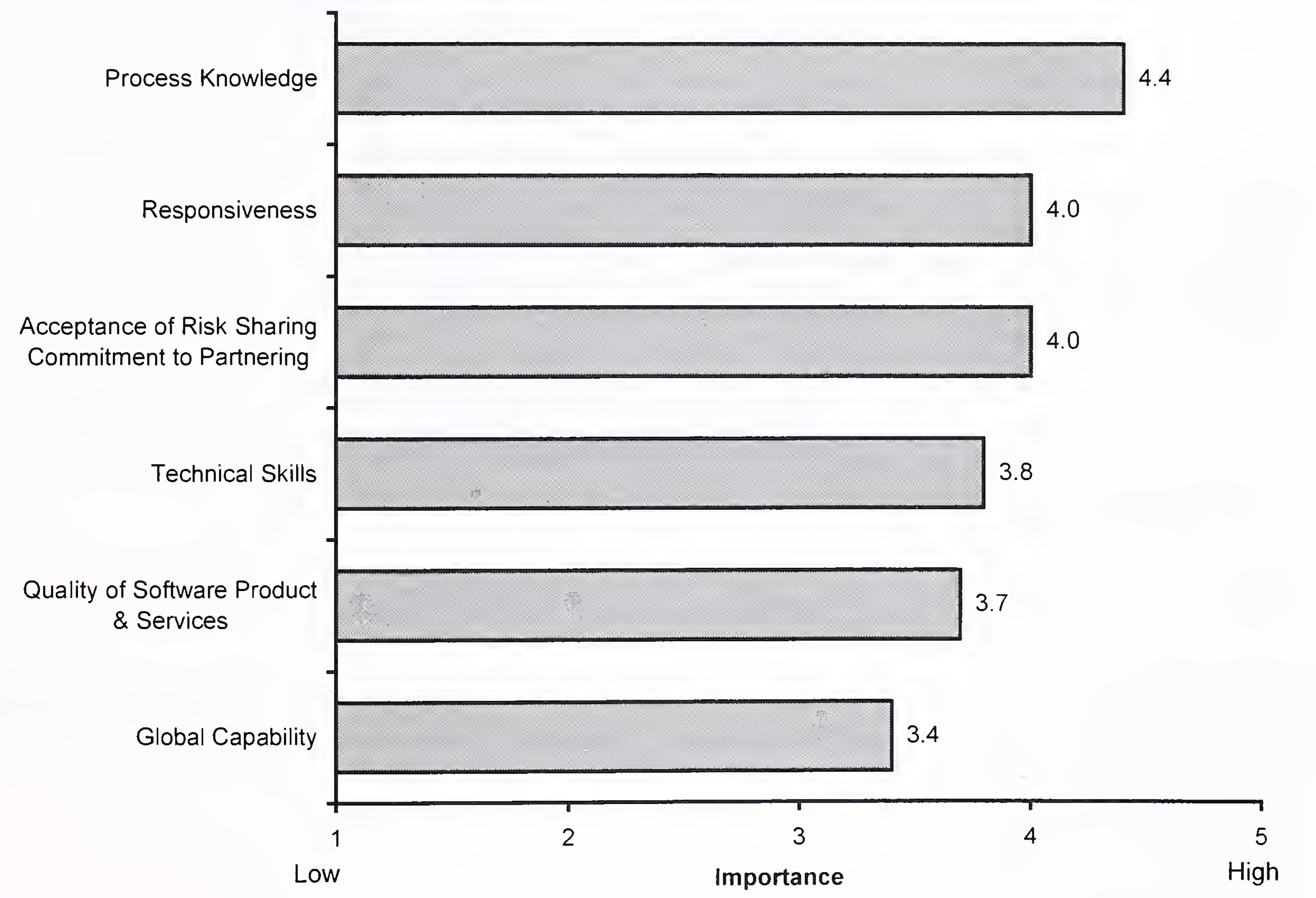
- Amdocs, AMS, Kenan for CC&B software, especially for billing
- Andersen for billing and consultancy services
- Bull for network management with ISM
- IBM which is mentioned for hardware IT equipment
- Lucent Technologies positioned on ACDs equipment
- Sema for systems integration, billing and customer care
- Sun for IT systems.

Regarding major reasons for choosing one vendor over another, Exhibit V-9 shows that Southern European operators focus on:

- Process knowledge especially when they are part of a global and/or large organisation (see PTTs and their subsidiaries, new entrants with international partners)
- Responsiveness when their business is facing strong competition (wireless and/or domestic markets)
- Acceptance of risk sharing and commitment to partnering when they are new entrants on the market.

Exhibit V-9

Major Reasons for Choosing IT Services Vendors - Southern Europe 1997



Sample of 14 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

6. Deployment of New Technology

Exhibit V-10 shows Southern European operators' usage of new technologies. Two-thirds see Internet/Intranet, RDBMS and datawarehousing as a decisive IT issue. Most of them already use ACDs and Internet.

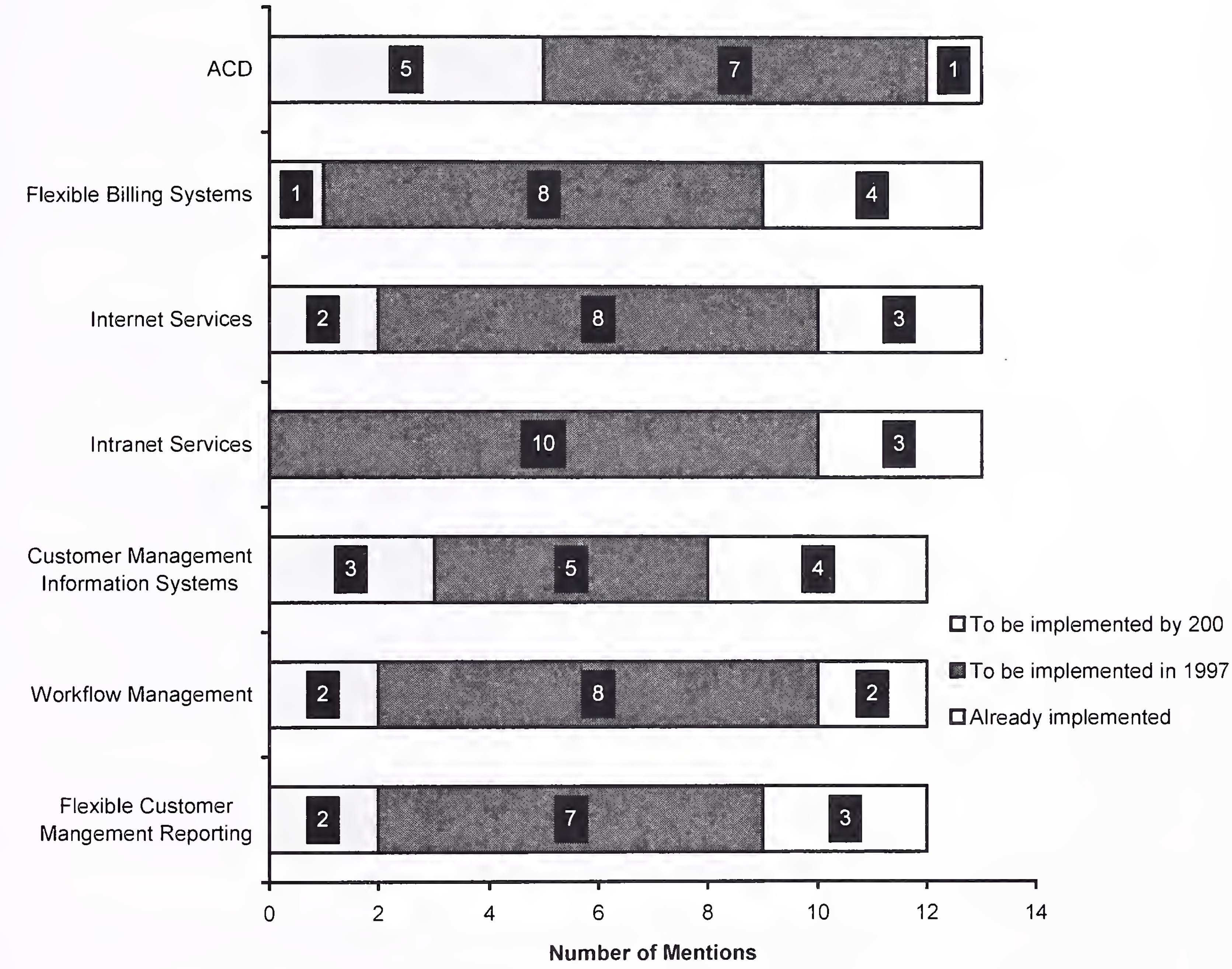
They plan to develop CIS, CIM, voice messaging and workflow management by the end of 1997.

They will implement datawarehousing, datamining systems and e-cash processing within one or two years.

Credit card processing, video and multimedia do not seem to be under consideration before the year 2000.

Exhibit V-10

Southern European Telecommunications Services Providers' Usage of New Technologies 1997-2000



Sample of 14 Telecommunications Providers

Source: INPUT

B
Central Europe

The Central European interviews are composed of:

- Three German executive managers
- One Austrian manager
- One Swiss marketing manager.

Three operators offer a wide range of services from voice telephony, mobile and paging services, to Internet services. Two only, offer mobile and paging services.

1. Telecommunications Services Providers' Major Focus is on Customer Relationship Management

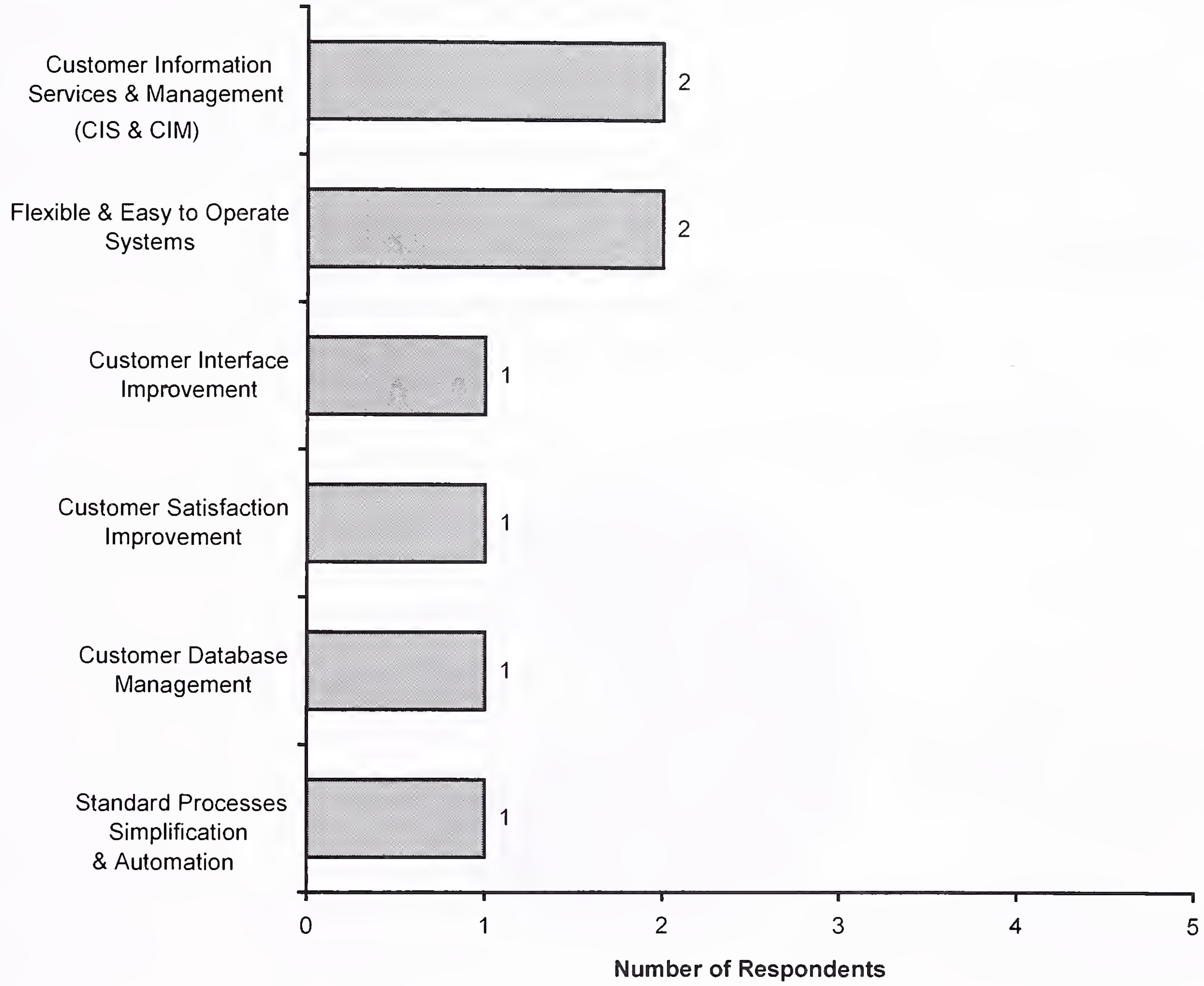
All Central European telecommunications providers major objectives' are related to increasing their customer bases and improving customer satisfaction.

Exhibit V-11 indicates that their major challenge is customer centric:

- Customer information services provision
- Being customer friendly
- Detection of new attitudes and needs fulfilled by relational databases and datawarehousing systems.

Exhibit V-11

Major CC&B Challenges Facing Central European Telecommunications Services Providers by the Year 2000



Sample of 5 Telecommunications Providers *Source: INPUT*

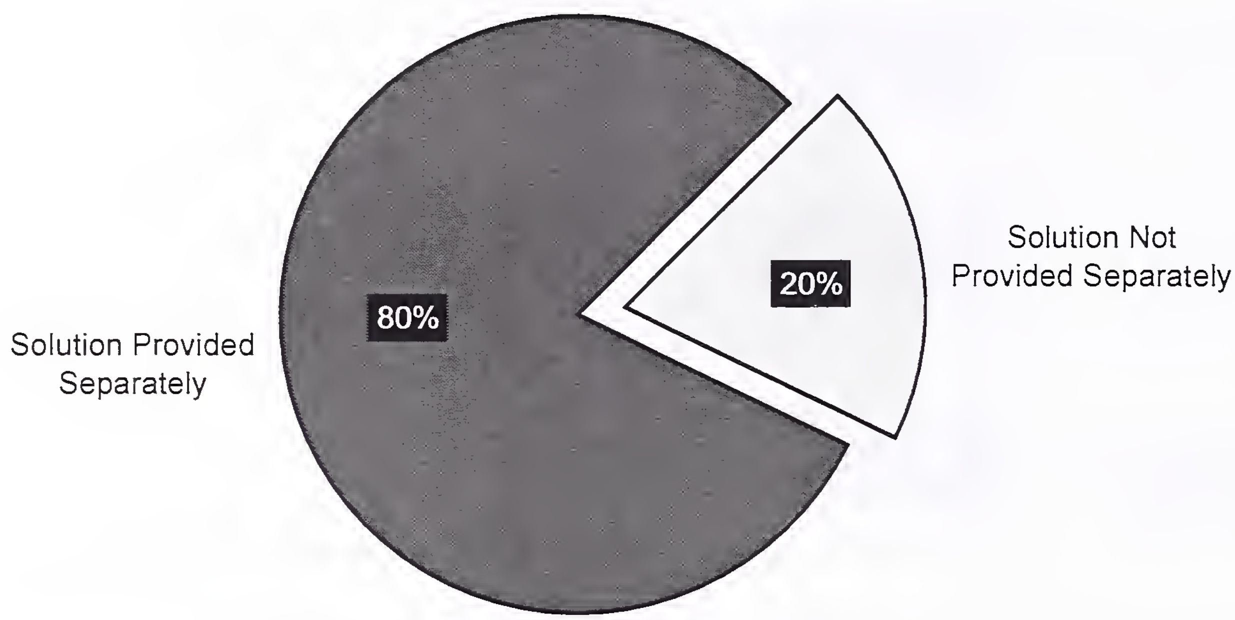
2. Major CC&B Solutions Provided Separately

The majority of telecommunications providers interviewed are traditional PTTs providing a wide range of services. As a result, 80% of them currently run CC&B as separate functions. This is twice the European average.

Indeed, INPUT found this approach in traditional organisations that have implemented different CC&B solutions and/or modules according to their distinct services divisions.

Exhibit V-12

Telecommunications Services Providers' Current CC&B Solution Central Europe 1997



Sample of 5 Telecommunications Providers *Source: INPUT*

3. SAP Foreseen as a Competitive Billing Software Solution

Most organisations mention the biggest challenge will involve increasing IT capacity to keep up with business growth. As a consequence, new applications are mostly geared to handle growth.

New entrants in the Central European market plan to cut some of their IT investment costs by integrating their mobile service with their fixed network service. A high proportion of the saving is expected to come from a common IT platform and common CC&B systems. But, aside from this possible benefit, a large majority of interviewed operators expect to double their use of IT by year 2000 so as to better handle the increasing volume of business.

Exhibit V-13

Telecommunications Services Providers' Major IT Changes within CC&B Solutions - Central Europe 1997

- Internet / Intranet
- Client / Server for Customer Access
- SAP Modules Deployment

Source: INPUT

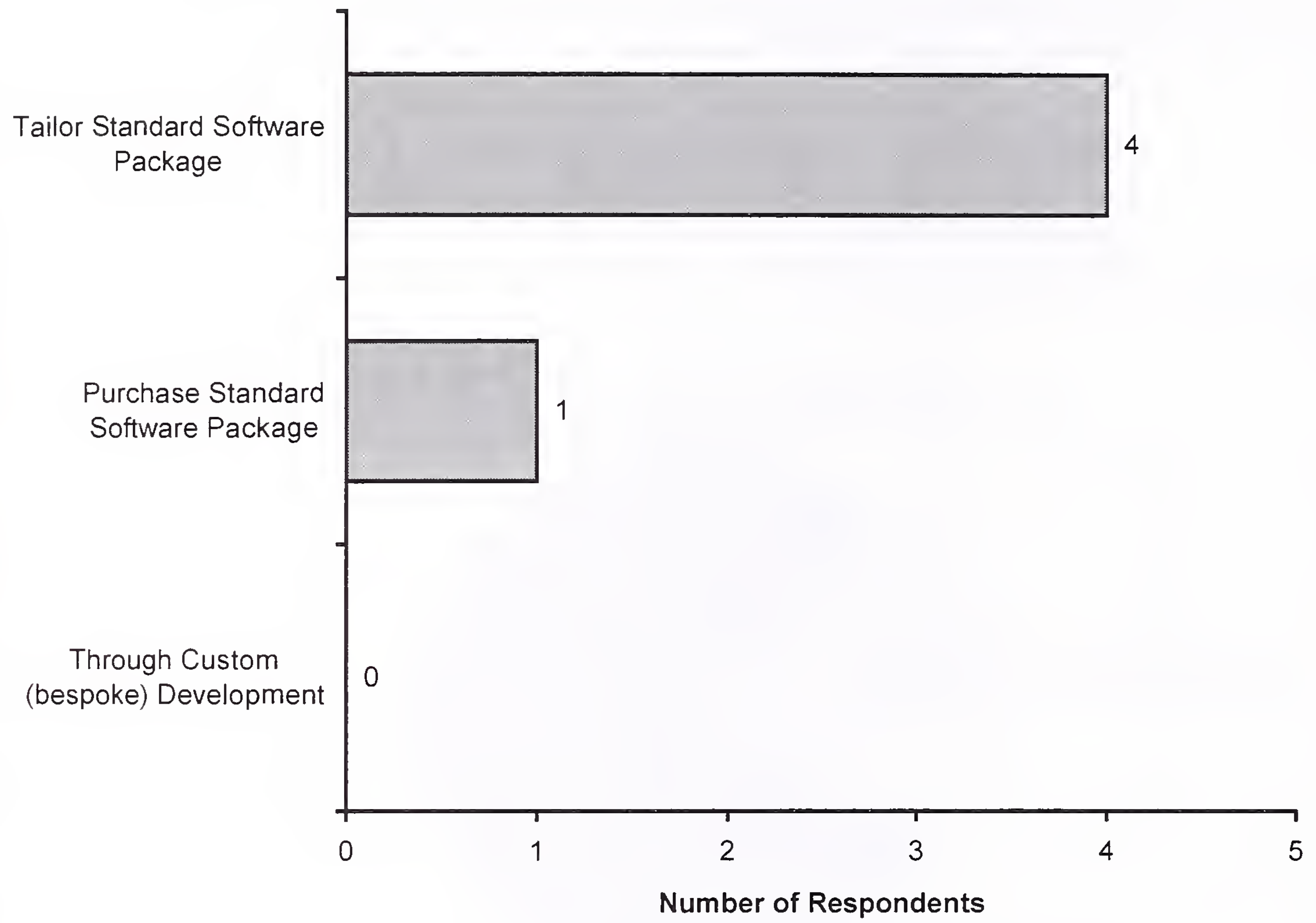
Regarding IT systems, most providers have their core hardware platforms in place and do not intend to change over the next 3 years. The major changes foreseen concern a move to open systems such as Unix.

A majority of them underline the fact that cost transparency and savings are of paramount importance regarding the implementation of new CC&B solutions. This is particularly the case for billing related applications.

Almost all operators interviewed plan to purchase packaged software products. The market leader in Germany and Austria appears to be SAP R/3 (Unix based) which is viewed as a reliable billing solution.

Exhibit V-14

Level of Software Packages Purchase - Central Europe 1997



Sample of 5 Telecommunications Providers *Source: INPUT*

Another growing segment is network deployment and integration. As the degree of network integration is remarkably low in Central Europe, most organisations will expand this facility in the near future.

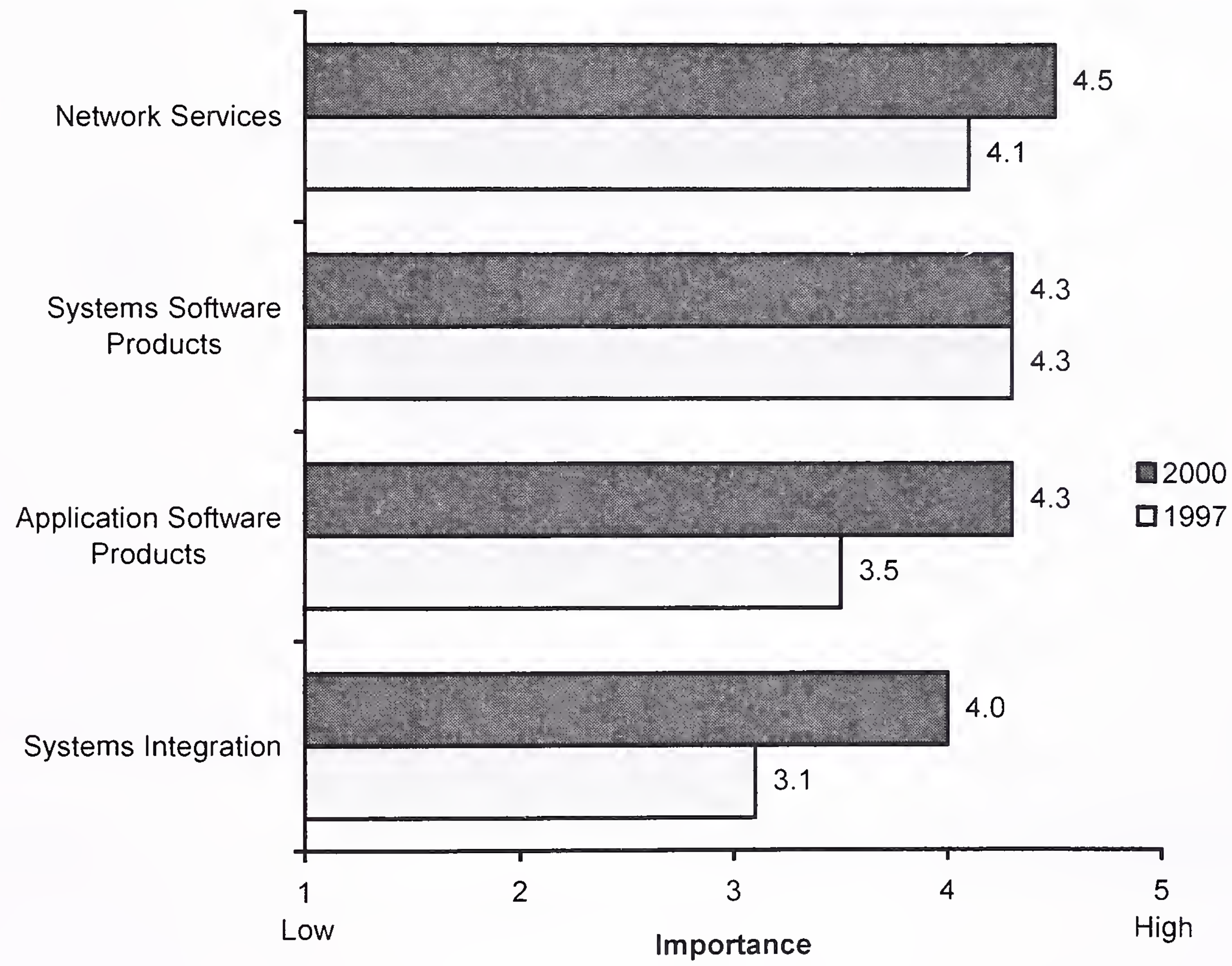
4. Central European Telecommunications Services Providers Need Network Services and Software Products

Exhibit V-15 presents a ranking of greatest needs for external services. Compared to other European regions, Central Europe's major need by the year 2000 will be network services.

The importance of systems integration and application software products will considerably increase in the next three years.

Exhibit V-15

Areas with Highest Need for External Services - Central Europe 1997-2000



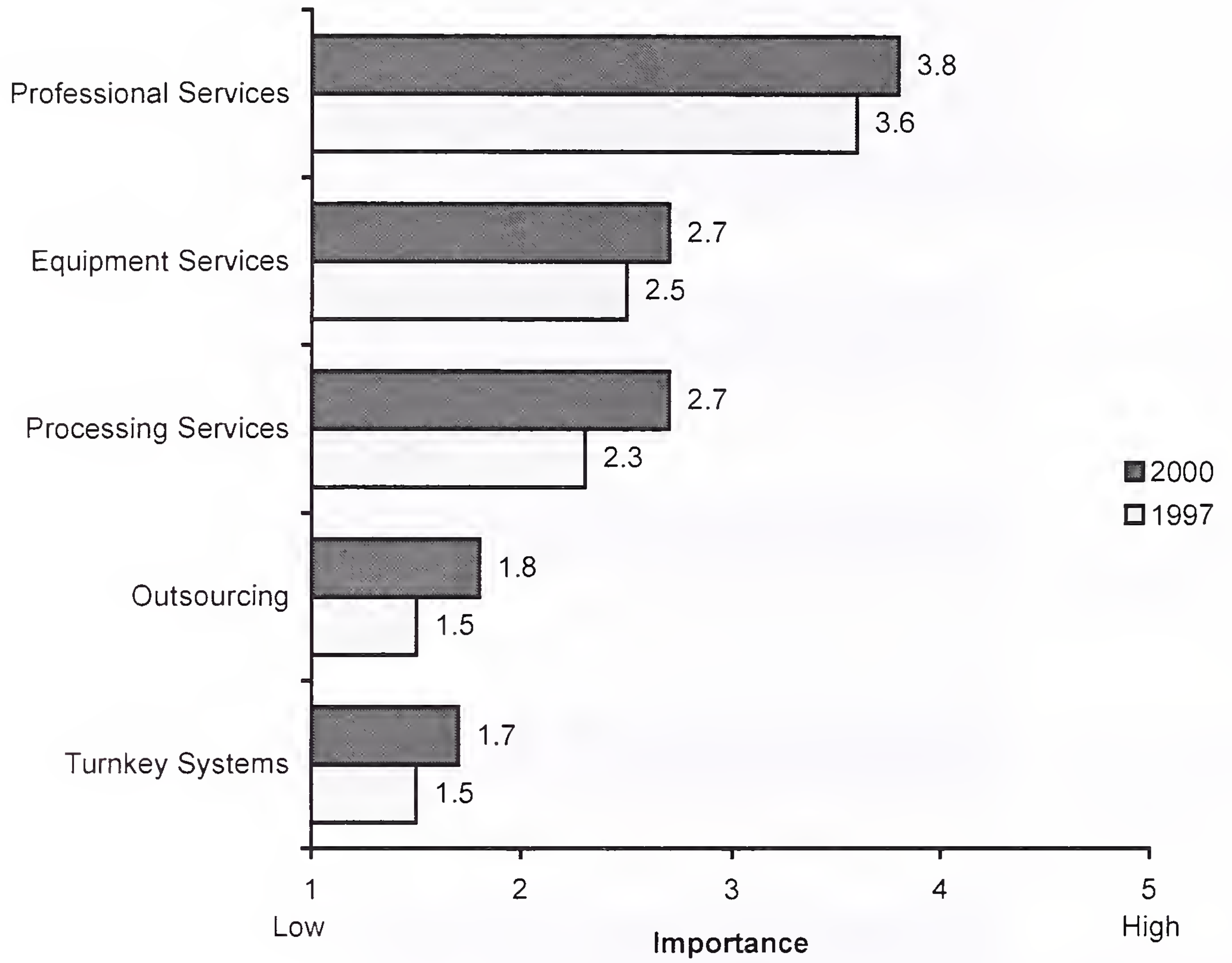
Sample of 5 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very strong and 1 is not at all

Source: INPUT

Exhibit V-16 shows that outsourcing, processing services, equipment services and turnkey systems are, and will stay, of minimal interest for Central European providers.

Exhibit V-16

Areas with Lowest Need for External Services - Central Europe 1997-2000



Sample of 5 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

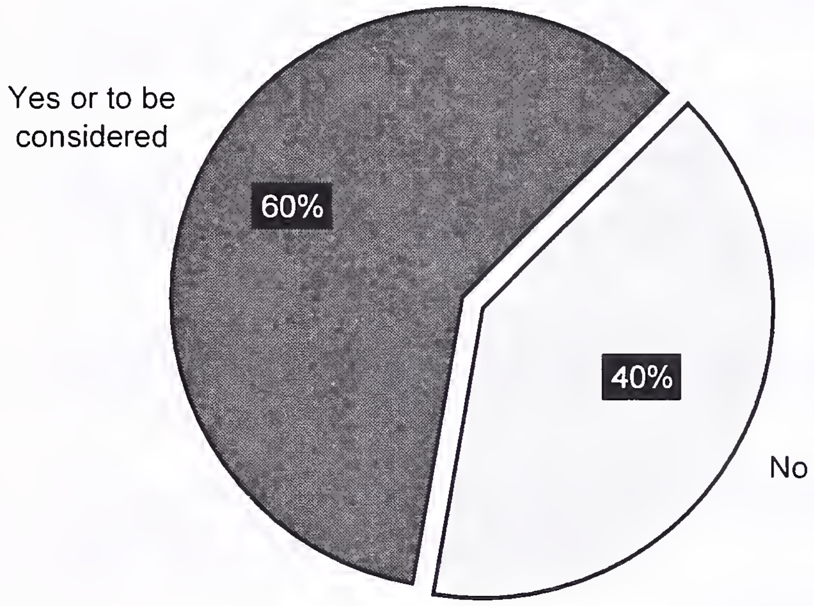
Source: INPUT

Exhibit V-17 illustrates the level of telecommunications services providers' openness to a partnership with an IT services vendor.

Three organisations are considering such a partnership with an IT services vendor especially in the customer care area. However, no precise alliances have been disclosed.

Exhibit V-17

Level of Openness to Partnerships with IT Services Vendors - Central Europe 1997



Sample of 5 Telecommunications Providers

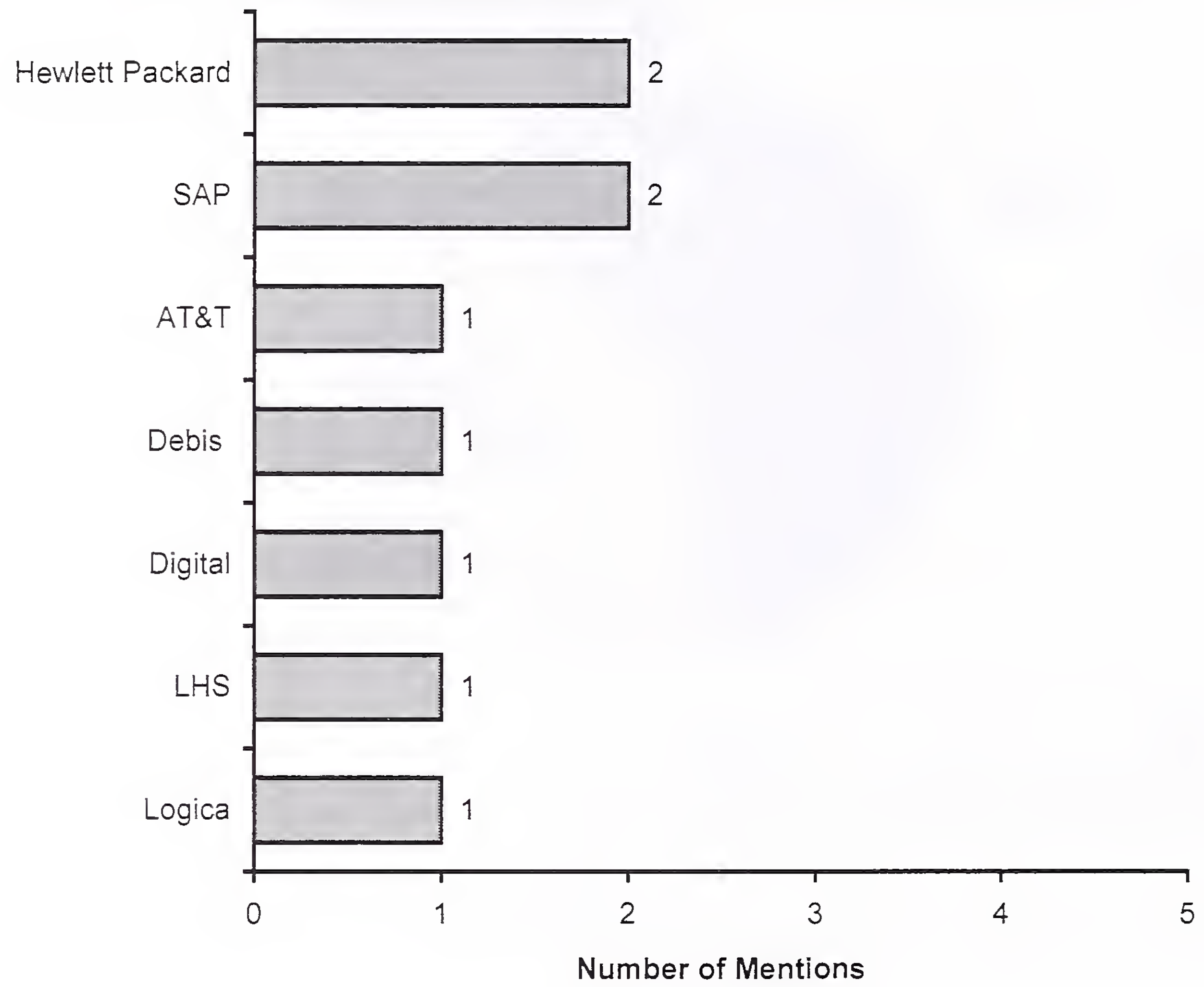
Source: INPUT

5. Perception of IT Services Vendors

Very few organisations have already used IT services providers for specific systems development or for systems integration although they have worked with specialists for software development. As a matter of fact, they have either no or very little perception of major IT services vendors capabilities in this area. Exhibit V-18 lists vendors mentioned by these organisations.

Exhibit V-18

Major Mentions of IT Services Vendors - Central Europe 1997



Sample of 5 Telecommunications Providers *Source: INPUT*

As Central European providers are eager to purchase standard software products, they are sensitive to the level of quality of these products.

Exhibit V-19 details other major reasons that should drive an organisation to choose one vendor over another.

Exhibit V-19

Major Reasons for Choosing IT Services Vendors - Central Europe 1997

Sample of 5 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very strong and 1 is not at all

Source: INPUT

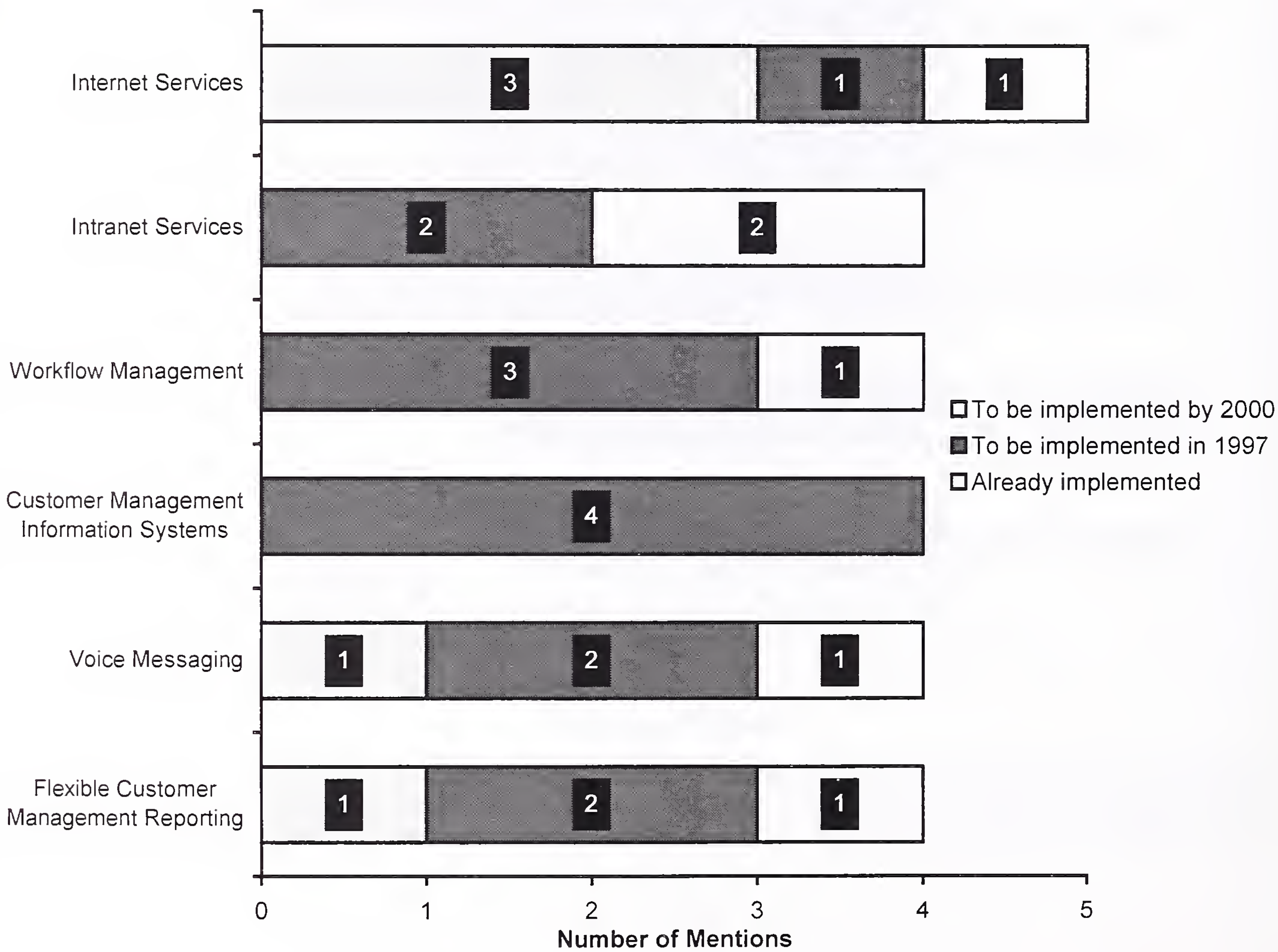
6. Deployment of New Technology

As in other European countries, Central Europe is focusing on Internet-related applications and technologies and views its growth as a major challenge for CC&B delivery.

Exhibit V-20 shows that ACD systems are not mentioned in the top 6 major technologies used. Central European operators are completely focusing on network services provision and usage.

Exhibit V-20

Central European Telecommunications Services Providers' Usage of New Technologies 1997-2000



Sample of 5 Telecommunications Providers *Source: INPUT*

C
Northern Europe

Northern Europe interviews are composed of 12 UK executive managers. About 50% of operators interviewed are partners of North American organisations. One-fourth are companies selling the products and services of their home countries (the U.S. or Australia for example).

Almost all offer voice telephony. In addition:

- About 20% to 30% of them offer mobile telephony and CATV services
- A few offer Internet and paging services
- About 30% only cover the business market.

All of the interviewees believe the Northern European market to be fully deregulated and all say there would be no further impact on their CC&B applications coming from deregulation.

1. Telecommunications Services Providers' Major Objectives are to Increase Customer Satisfaction

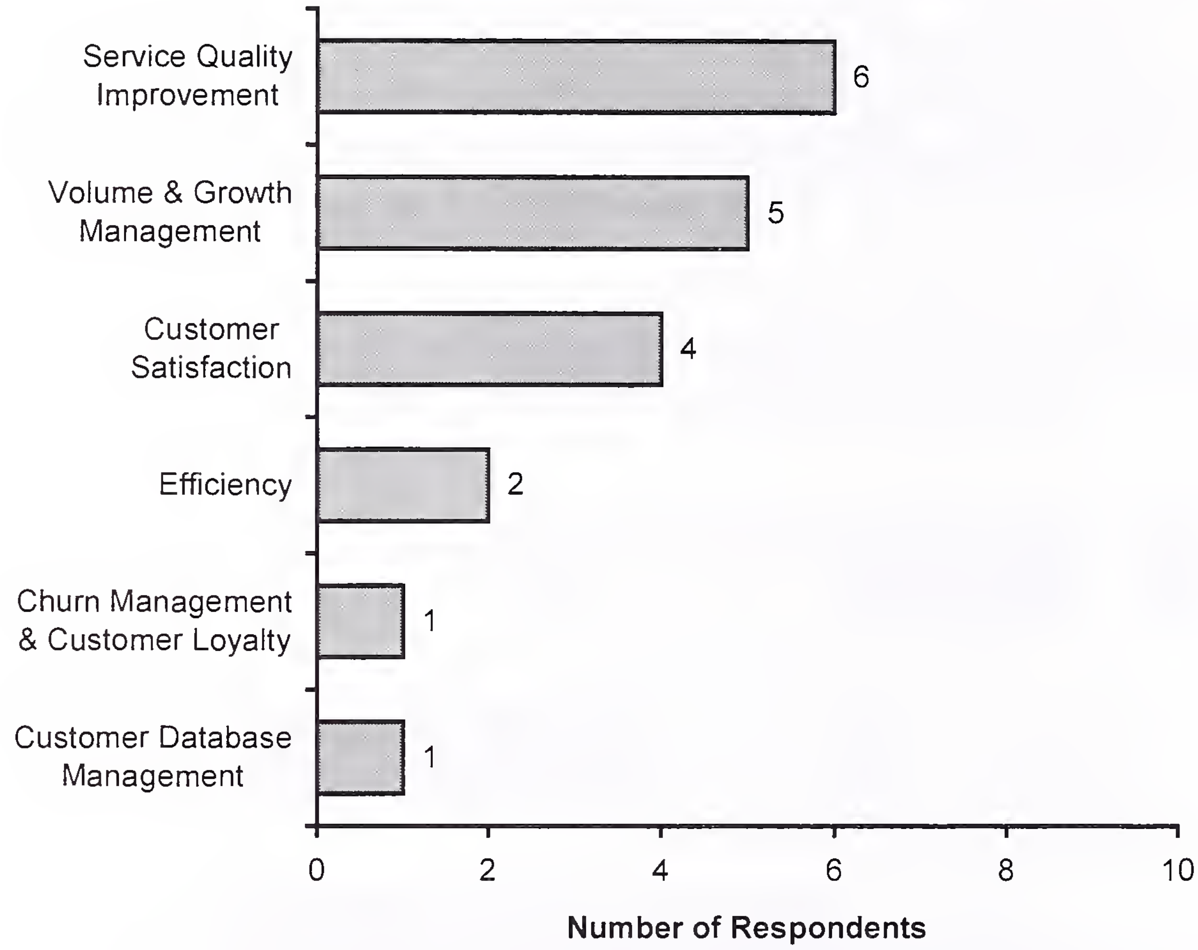
IT executives in Northern Europe are primarily concerned with customer satisfaction issues. More than half of all respondents named "improve customer satisfaction/provide a high service quality" as the major CC&B pressure for the next three years, as illustrated in Exhibit V-21.

Related to this issue is the need to improve customer service levels through adequate SLAs and telephony services.

Another area of focus concerns efficiency, accuracy and productivity improvement.

Exhibit V-21

Major CC&B Challenges Facing Northern European Telecommunications Services Providers by the Year 2000



Sample of 12 Telecommunications Providers *Source: INPUT*

2. CC&B will be Integrated as a Single Function

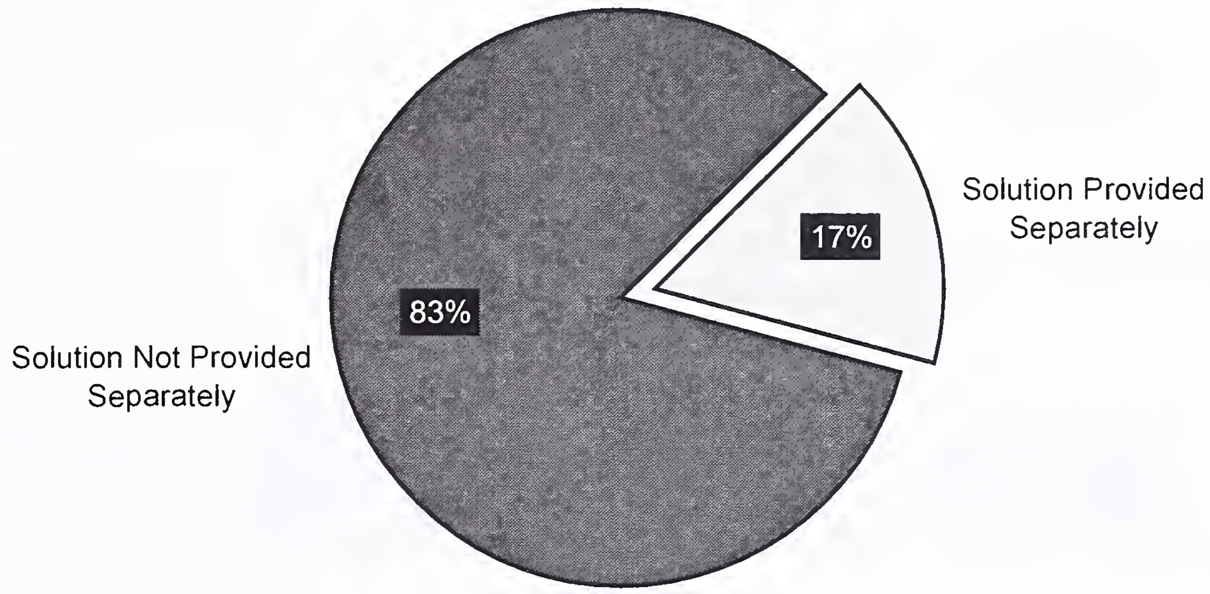
Exhibit V-22 shows that the majority of companies run CC&B together as one function. All operators state that it is company policy to have them grouped together and that IT staff could not influence this company policy. Some of them even mention that both customer care and billing are handled by the finance department.

Northern European telecommunications providers consider with great interest low cost deployment and improvement of CC&B integrated solutions as they have to provide low priced telephony products and services.

Billing systems should not only cover their home country's specifications but also those of countries where they provide services (e. g. Scandinavia and the U.S.). This has a considerable impact on how they approach each market and on the way they deliver customised services to their clients. Billing systems have to answer local to global demands.

Exhibit V-22

Telecommunications Services Providers' Current CC&B Solution Northern Europe 1997



Sample of 12 Telecommunications Providers

Source: INPUT

3. Increase IT Capacity to Keep Up with the Growth of Business

A large majority expect the use of IT to increase by over 100% in the next 3 years to handle the increased volume of business (number of customer calls, bills produced, customer orders, etc.). New businesses and applications are mostly geared to handling growth.

Most interviewees felt this to be the biggest challenge and that systems should be parametered to support high volume of transactions and have the capacities to match business growth (e.g. new entrants employing their own fixed radio access technology to compete with traditional mobile telecommunications services providers and cable companies to offer voice telephony services). While most users have their core hardware platforms in place and do not intend changing them in the next 3 years:

- Some will have to phase out legacy Digital and ICL systems and sign with new hardware suppliers. They have taken no decisions on new partners and have not even identified them yet. Their choice will depend on new packaged software solutions implemented

- Others, especially using open and UNIX systems from HP and Sun, think that they may find it difficult to cope with growth and will have to extend their systems capacities.

Exhibit V-23

Major IT Changes within CC&B Solutions Telecommunications Services Providers' - Northern Europe 1997

- Legacy Systems Migration
- Custom Development Mixed with Standard Software Packages
- NT Deployment

Source: INPUT

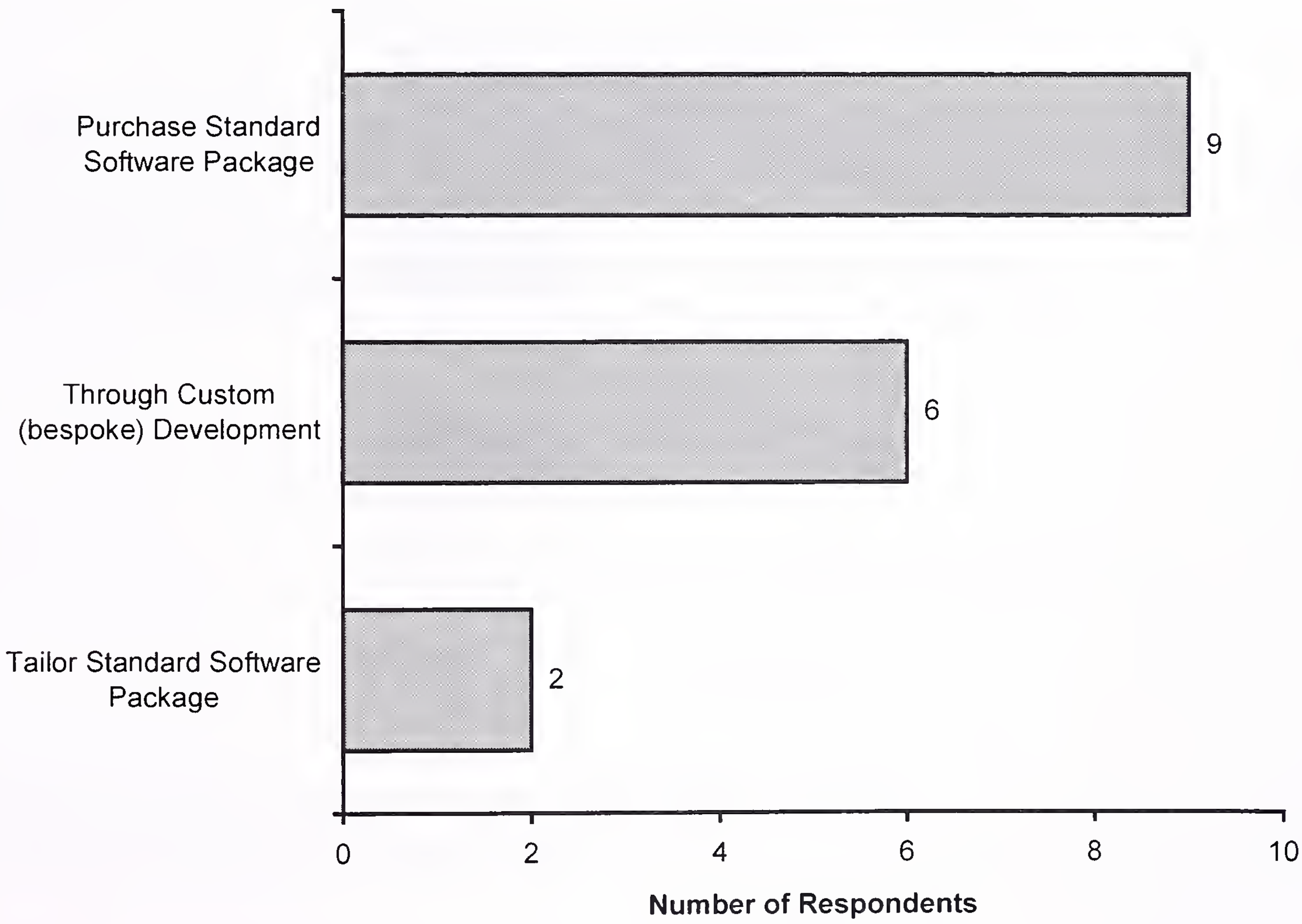
Implementing a new telephone answering system and/or telephony services appears to be another of the major Northern European issues. Organisations intend to improve the quality of their front-end systems whereas their back-office systems are expected to cope with new business volume.

In Northern Europe, CC&B should not be impacted by new business processes even if telecommunications organisations operate in a very reactive changing market. New business processes have already been widely implemented.

Almost all plan purchasing packaged software. As illustrated in Exhibit V-24, about 50% will develop applications in-house, whilst 75% will use outside developers and/or buy standard software packages.

Exhibit V-24

Level of Software Packages Purchase - Northern Europe 1997



Sample of 12 Telecommunications Providers - Multiple Choice *Source: INPUT*

4. Application Management Interests Two-Thirds of Companies

Regarding IT usage, responses vary significantly. In general:

- There is little interest in professional services, systems integration, turnkey systems and network services. The first steps of implementing a CC&B system seem to have been taken already in Northern Europe

- About 50% of organisations are interested in application management and even have already contracted with an IT services vendor. That appears to be a better solution than developing in-house applications. A few are open to outsourcing the whole CC&B IT function while others are more cautious about this

- Everybody is interested in applications software packaged products. They should cover both billing and customer care and be parameter driven allowing for huge growth

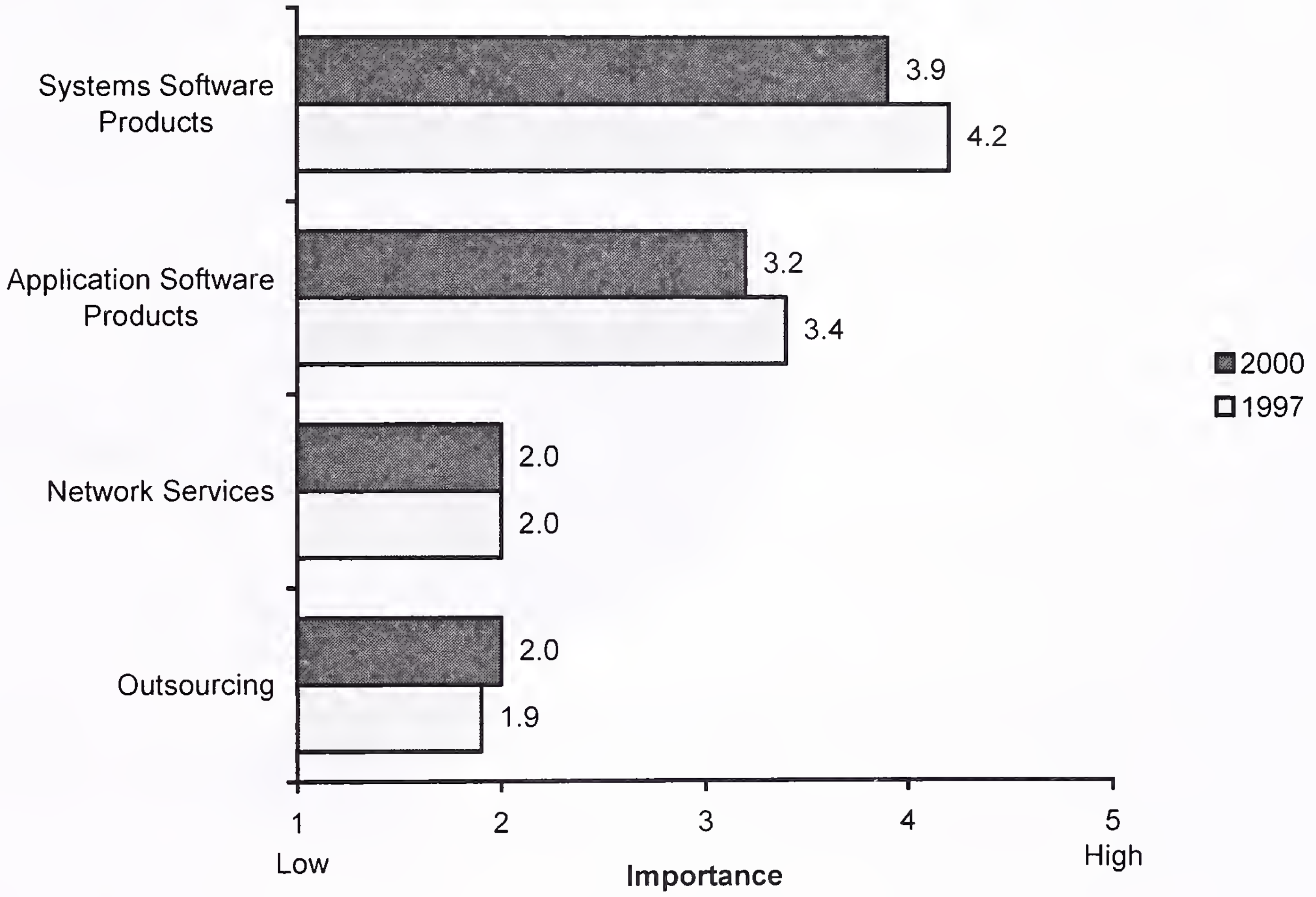
  Nonetheless, some of the respondents have very strong company policies requiring all applications to be developed in-house. This is particularly true for new sets of applications for new entrants and network services providers whose partners already have developed part of their applications in-house.

Exhibit V-25 details the external services on which Northern Europe telecommunications providers intend to spend their budget. Compared with the rest of Europe there are significant differences. The exhibit indicates that Northern European companies spend a larger part of their budgets on applications development and outsourcing than do European operators on average.

Extensive professional services partnership is considered when in-house skills are not sufficient to cover architecture design, performance issues, applications development and other consultancy services.

Exhibit V-25

Areas with Highest Need for External Services - Northern Europe 1997-2000



Sample of 12 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

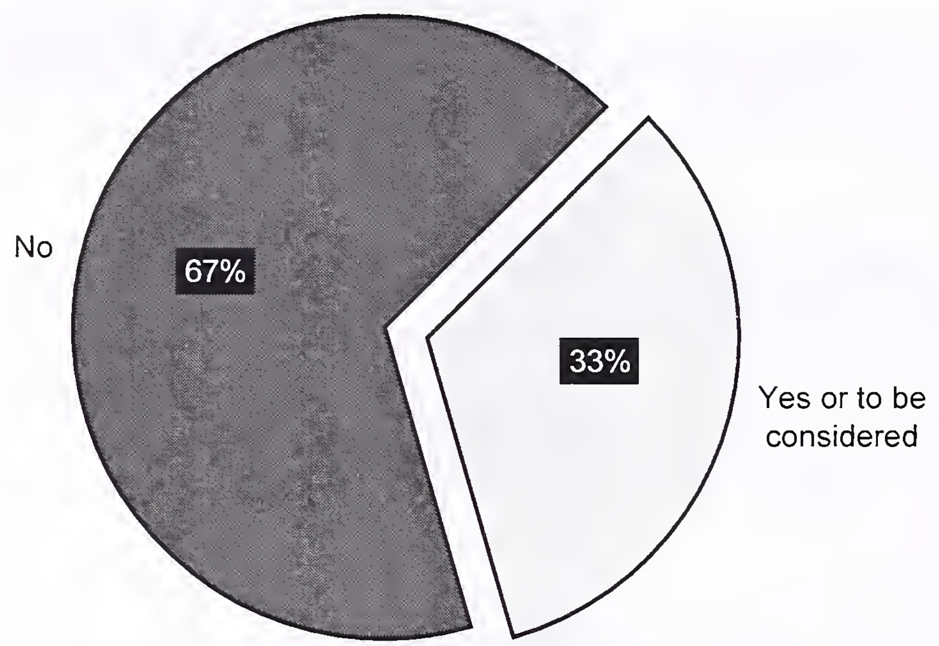
Exhibit V-26 illustrates the level of telecommunications services providers' openness to a partnership with an IT services vendor.

Only one-third of Northern European organisations are considering such a partnership with an IT services vendor. They:

- Are looking for operational and systems optimisation processes
- Feel that outsourcing might be a better option.

Exhibit V-26

Level of Openness to Partnerships with IT Services Vendors - Northern Europe 1997



Sample of 12 Telecommunications Providers *Source: INPUT*

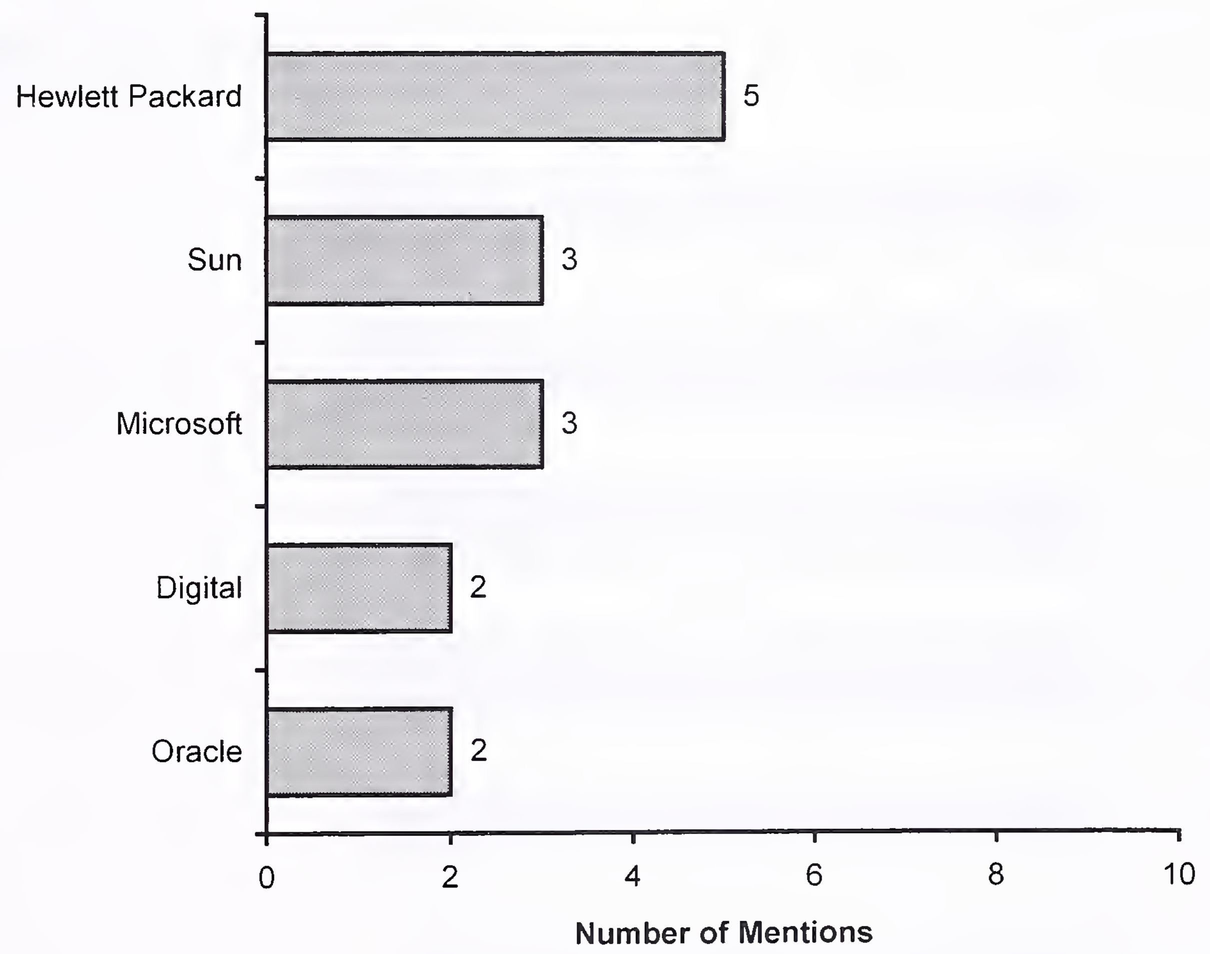
5. Perception of IT Services Vendors

Very few companies have used IT service providers for systems development and/or for systems integration: they have used specialised software development vendors with specific skills. As a matter of fact, they have no or very little perception of major vendors capabilities.

Northern European executives seem to have a different perception of IT service vendors from their colleagues in Southern and Central Europe. As in the rest of Europe, HP is ranked as the leading vendor by 50% of respondents. However, many other IT services vendors are ranked also highly by respondents as detailed in Exhibit V-27.

Exhibit V-27

Major Mentions of IT Services Vendors - Northern Europe 1997



Sample of 12 Telecommunications Providers

Source: INPUT

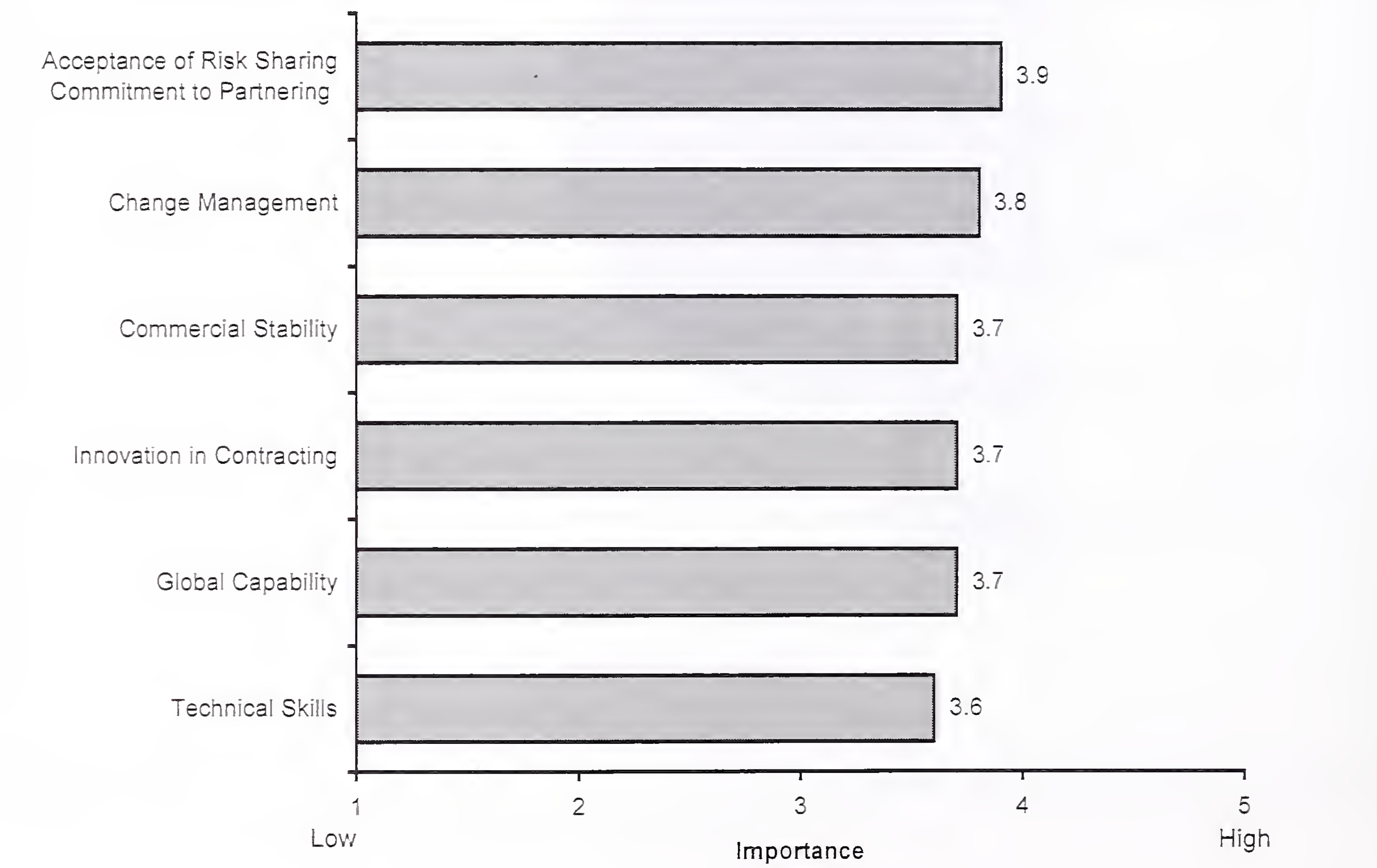
Other IT services vendors that show up on the rating are PA, CTP, Tcon Business Systems, FI Group, Icor, Tertia, Savilles, Sequent, Amdocs, Anite.

As shown in Exhibit V-28, Northern European organisations seem more willing to accept risk sharing and/or commitment to partnering with a vendor and to push change management capabilities as a vendor selection criteria. This partly can be explained by the highest level of CC&B market maturity in this region.

Other major selection criteria suggested by telecommunications providers are: benchmarking skills, staff availability, open systems capacity planners, SAP implementation contractors, security management, client-server experts (including PC servers, networking and middleware).

Exhibit V-28

Major Reasons for Choosing IT Services Vendors - Northern Europe 1997



Sample of 12 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

D
Non-European Companies

Outside Europe, interviews were conducted with six U.S. and one Japanese telecommunications companies. All offer a wide range of telecommunications services and have a global services coverage.

1. Telecommunications Services Providers' Major Objectives are to Provide CIS and Improve Customer Interface

CC&B executives outside Europe are primarily concerned with:

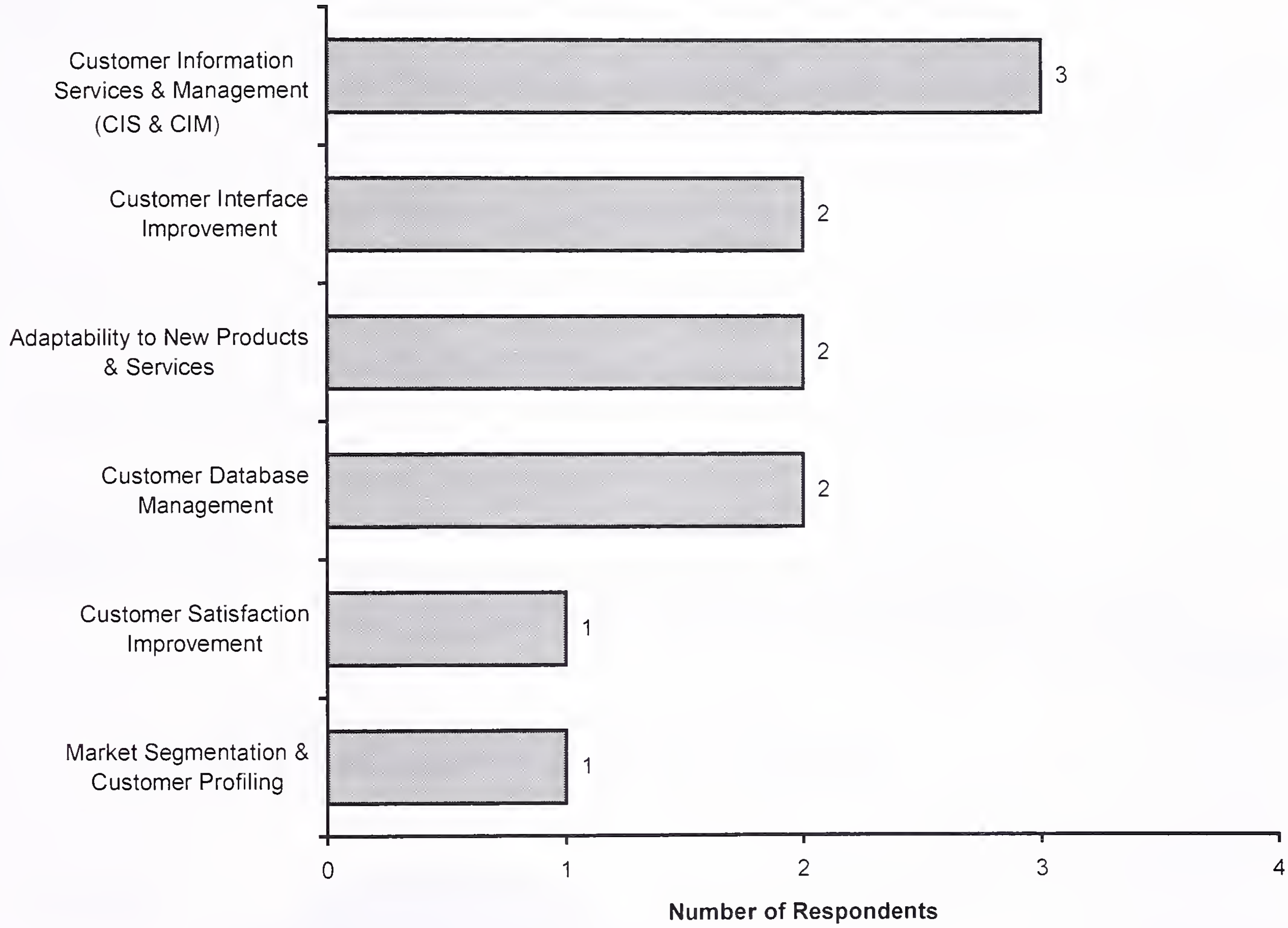
- Rapidly increasing customer expectations
- Increasing customer satisfaction through customised billing capabilities
- Making customer care a competitive advantage by using better customer knowledge
- Supporting sales and marketing efforts by integrating customer and billing data into a warehouse that can be used to drive marketing and to develop new packages and bundled services
- Paying more attention to network elements and management level systems in order to fulfil all of the future billing requirements. This can be done with Telecommunications Management Network (TMN) technology which integrates different functional architectures such as business, service and network management.

Exhibit V-29 shows that major challenges for non-European vendors are customer driven. Some of the new applications mentioned by U.S. operators and directly related to the customer are:

- Proactive marketing with all customer contacts
- Market analysis and electronic commerce software
- Speedy service and ordering process thanks to new electronic bonding gateway products. This system allows real-time, direct access to billing records
- Transparent billing services
- Relational databases to support service negotiations and trouble reporting for different market segments.

Exhibit V-29

Major CC&B Challenges Facing Non-European Telecommunications Services Providers by the Year 2000



Sample of 7 Telecommunications Providers

Source: INPUT

2. CC&B will be Integrated into Single Function

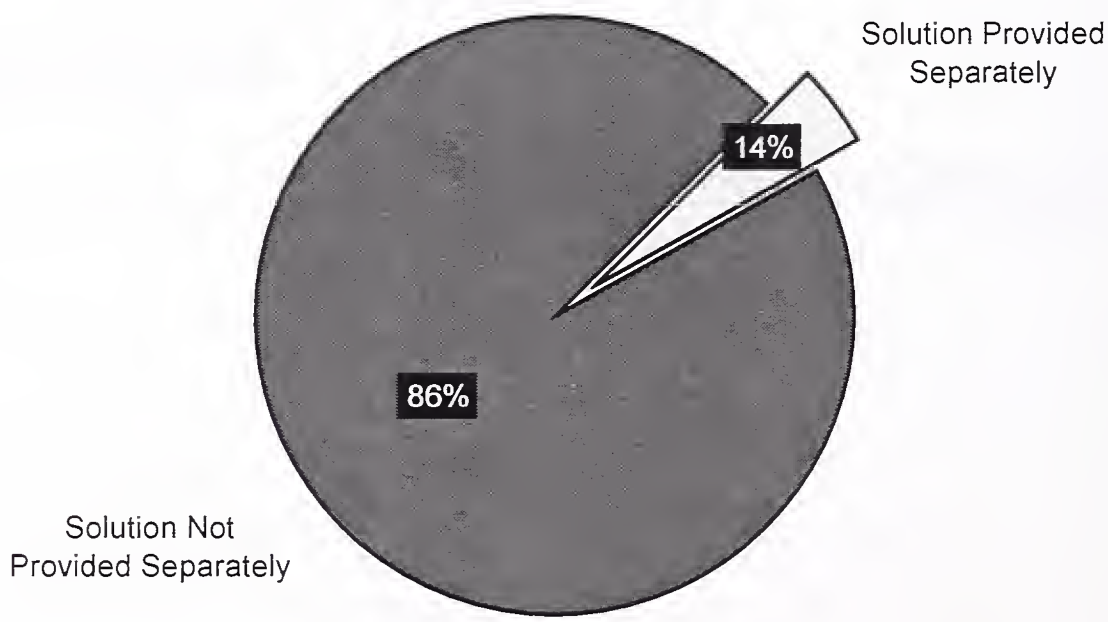
As in Northern Europe, the majority of U.S. companies run CC&B together as one function. They argue that this serves the customer better as they are able to get customer feed-back directly into new and revised billing systems applications. Even, those who started out using separate solutions had problems with customer satisfaction, and then finally merged customer care and billing for better synergy. As customer care managers need to know the billing process, functional integration is critical.

According to U.S. providers, separate CC&B solutions tend to confuse the customer. Only one U.S. operator mentioned keeping them separate because their billing solutions have such different supporting technologies compared to customer care that combining them would be too difficult.

Consolidated and customised billing are important because they enable multiple services (long distance, local, international, wireless, Internet, etc.) to be billed in one customised statement.

Exhibit V-30

Non-European Telecommunications Services Providers' Current CC&B Solution 1997



Sample of 7 Telecommunications Providers — *Source: INPUT*

3. Internet and Datawarehousing Technologies

For non-European companies, replacing legacy systems with integrated ones is important as there is a strong need to synchronise real-time access to data.

EDI and Internet access are new applications that have been successfully developed for real-time ordering and provisioning. Developing Internet access also enables telecommunications providers to resolve problems without the need for human intervention.

According to U.S. providers, datawarehousing and analysis tools will significantly change the way they do business and will considerably alter their services portfolio.

Exhibit V-31 presents the three major IT changes foreseen by non-European organisations.

Exhibit V-31

Non-European Telecommunications Services Providers' Major IT Changes within CC&B Solutions - 1997

- Internet / Intranet
- RDBMS and Datawarehousing
- On-line Electronic Delivery and Payment

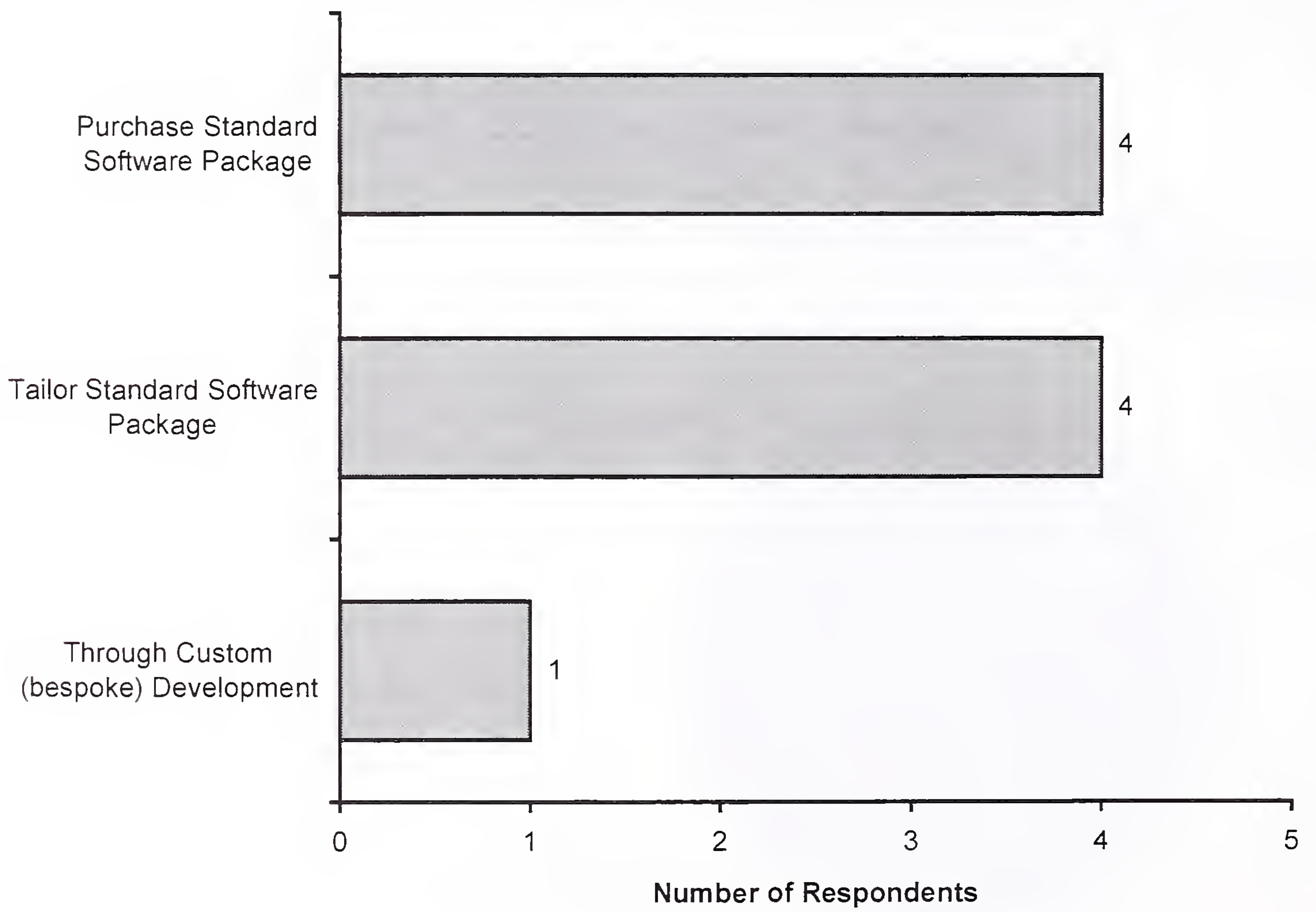
Source: INPUT

Software products typically provide U.S. organisations with the ability to meet customer needs and achieve profit goals. As illustrated in Exhibit V-32, the low level of software products purchase compared to the European market can be explained by the fact that major organisations already have acquired basic standard products.

The risk they now face is that their customers, particularly professional customers, hearing about a new product, expect them to have it integrated immediately. They are struggling because they face a number of alternative scenarios that must be considered, each favouring different players and market segments. As a consequence, integration software will continue to differentiate the competition.

Exhibit V-32

Level of Software Packages Purchase - Non-European Telecommunications Services Providers 1997



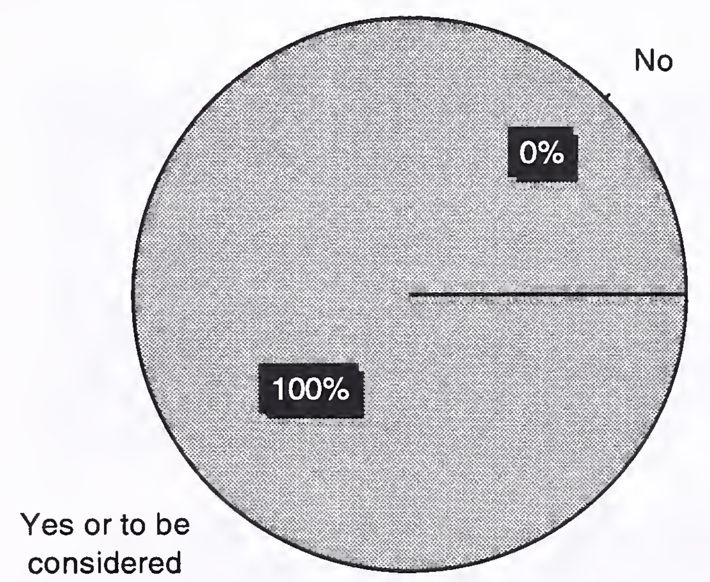
Sample of 7 Telecommunications Providers - Multiple Choice *Source: INPUT*

4. Business Process Integration and Outsourcing have the Greatest Impact

Beyond technology, the need for greater access to skills (wireless billing requirements are currently consuming a lot of resources) and industry expertise is leading telecommunications providers towards outsourcing and partnership arrangements. Exhibit V-33 illustrates that all of the organisations interviewed are considering a partnership to support their CC&B solutions.

Exhibit V-33

Level of Openness to Partnerships with IT Services Vendors - Non-European Telecommunications 1997



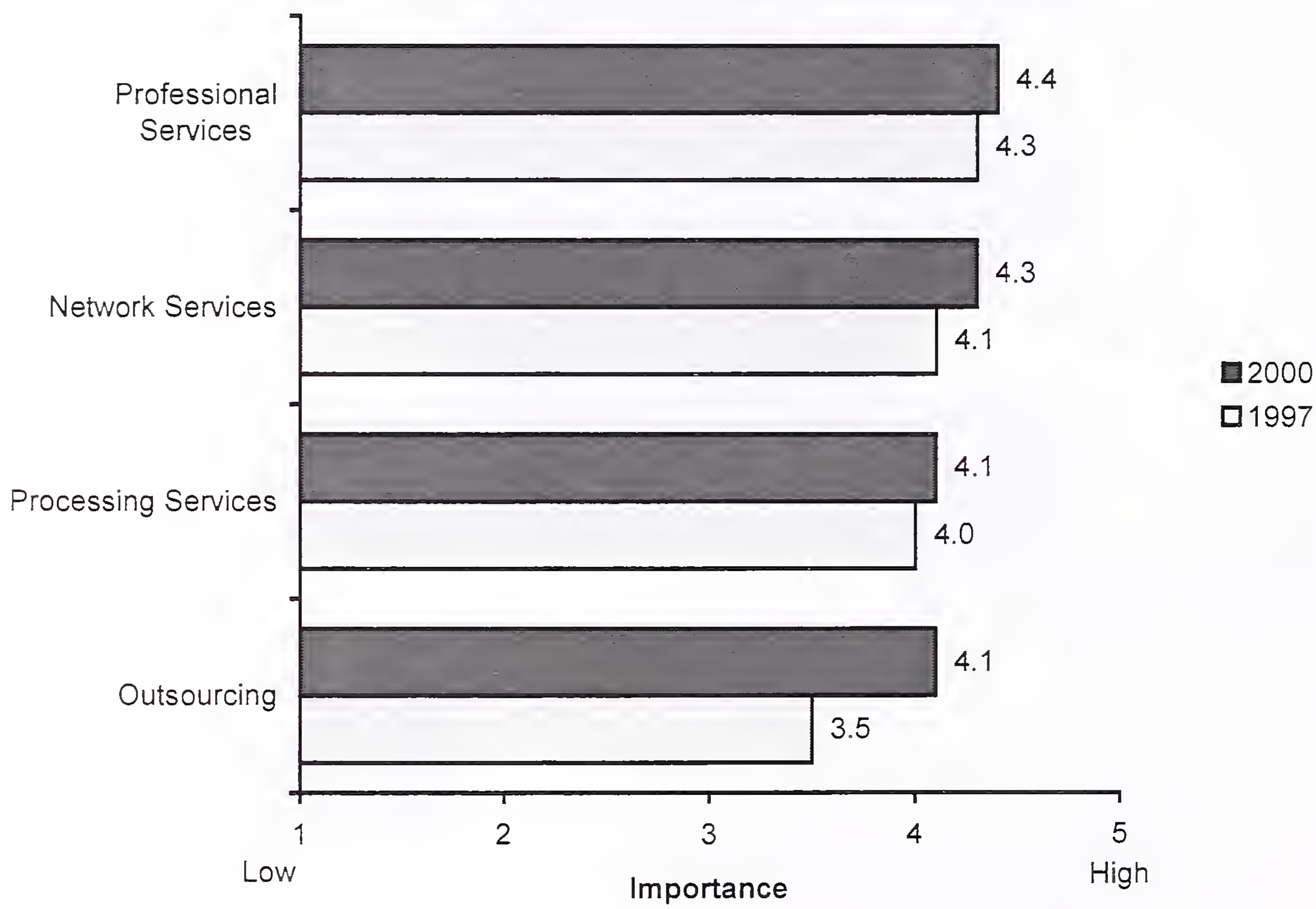
Sample of 7 Telecommunications Providers *Source: INPUT*

Outsourcing is foreseen as the biggest process change. Nevertheless, U.S. operators do not like to outsource their contact with the customer. Consequently, they are putting more emphasis on the front-end systems used to support customer service and/or are eager to staff call centres with the proper skills.

Exhibit V-34 and V-35 present the external services on which non-European telecommunications providers intend to spend their budget. The exhibits underline that U.S. providers are on average currently spending a larger part of their CC&B budgets on external services than are European operators.

Exhibit V-34

Areas with Highest Need for External Services - Non-European Telecommunications Providers 1997-2000



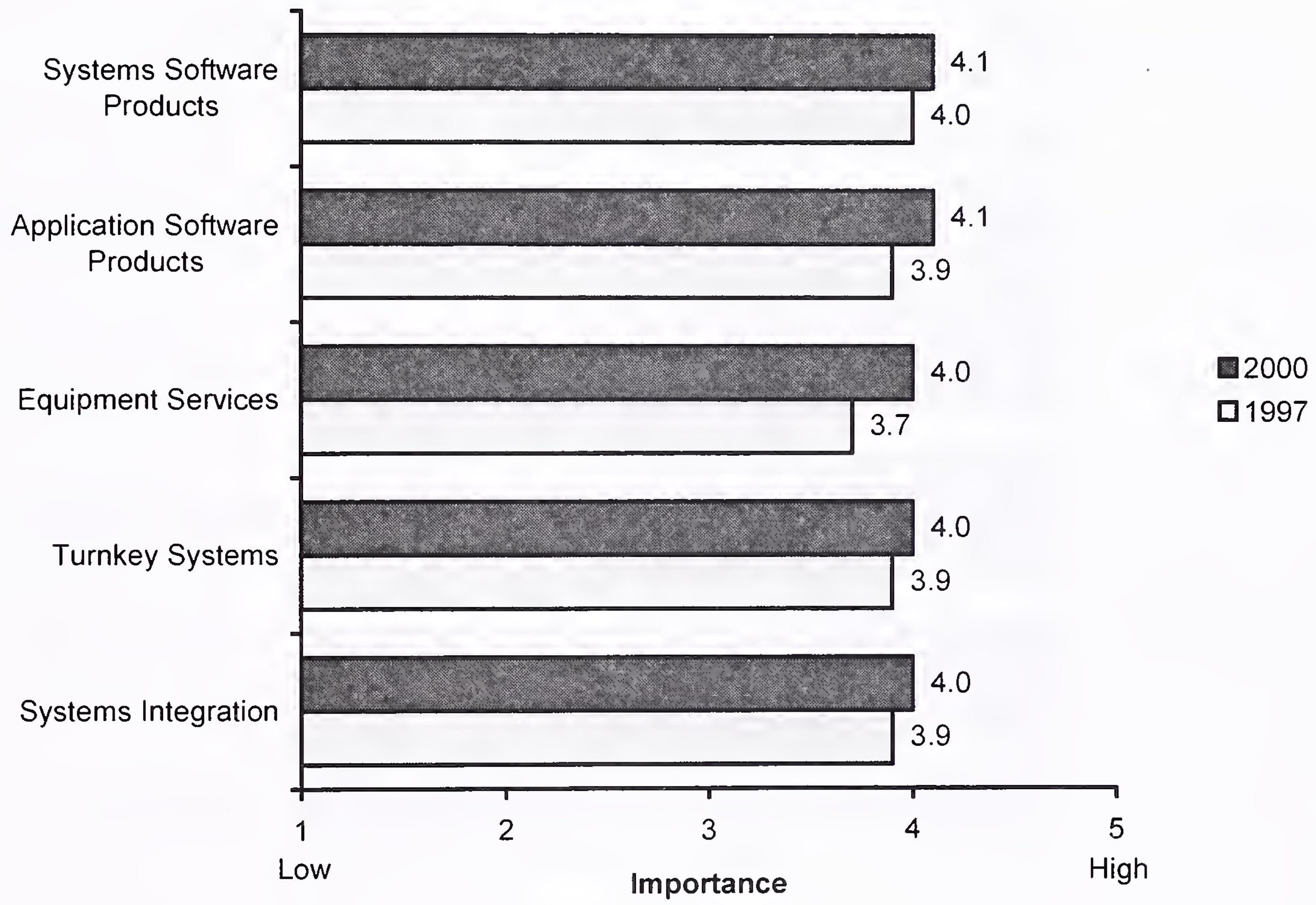
Sample of 7 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

In the case of many companies interviewed by INPUT, their existing systems do not line up adequately with their business processes and organisation which, for some operators, will be completely restructured in the next few years. As a matter of fact, business process integration appears to be gaining popularity among services providers. This explains the very high level of need for professional services compared to other services since business process integration is a complex task to undertake.

Exhibit V-35

Areas with Lowest Need for External Services - Non-European Telecommunications Providers 1997-2000



Sample of 7 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

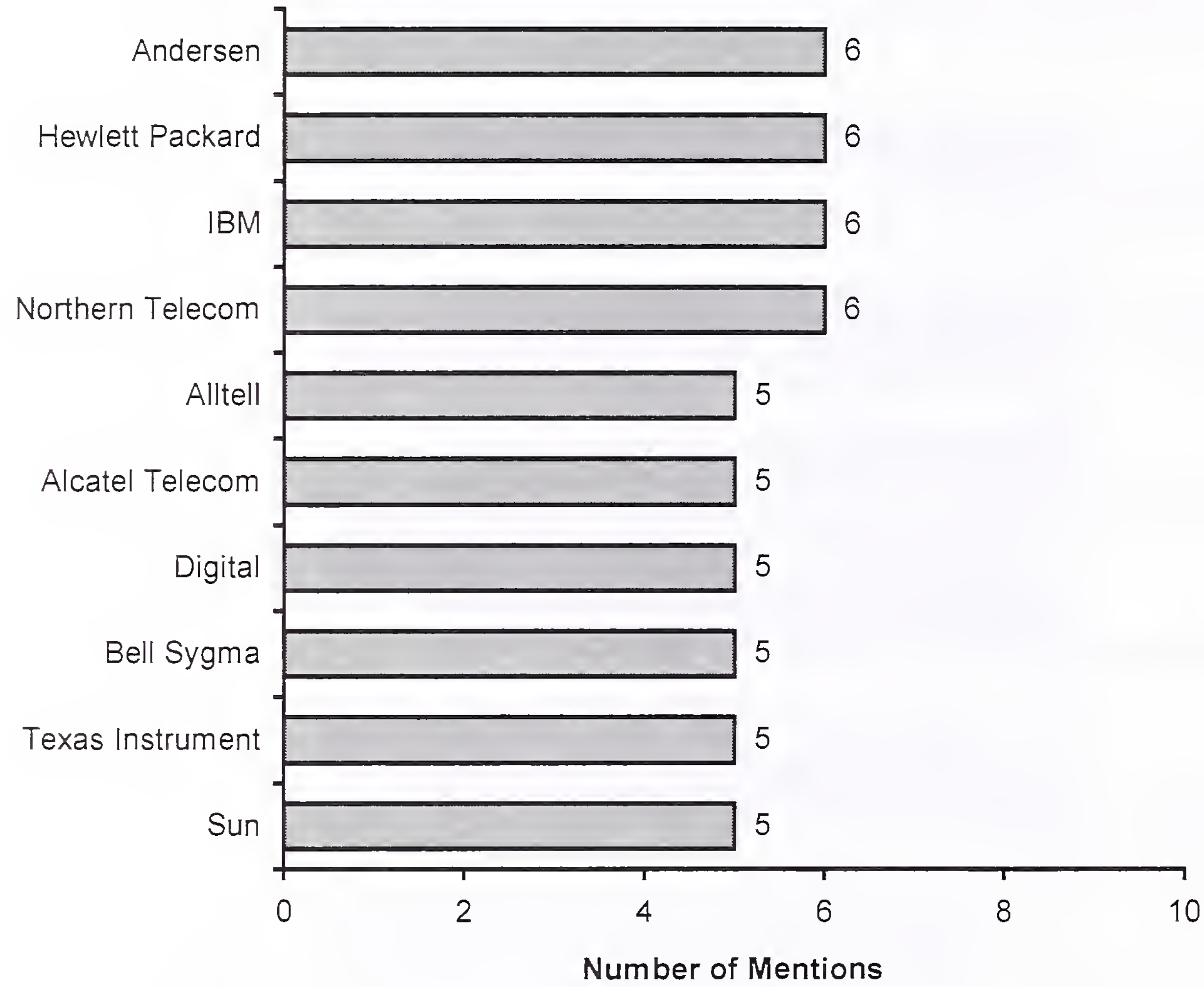
Source: INPUT

5. Perception of IT Services Vendors

Non-European telecommunications providers were reluctant or often unable to specify the applications that vendors might provide. However, they are willing to name vendors and to offer a perception rating. Exhibit V-36 shows major mentions of IT services vendors.

Exhibit V-36

Major Mentions of IT Services Vendors - Non-European Telecommunications Providers 1997



Sample of 7 Telecommunications Providers *Source: INPUT*

Other vendors listed are:

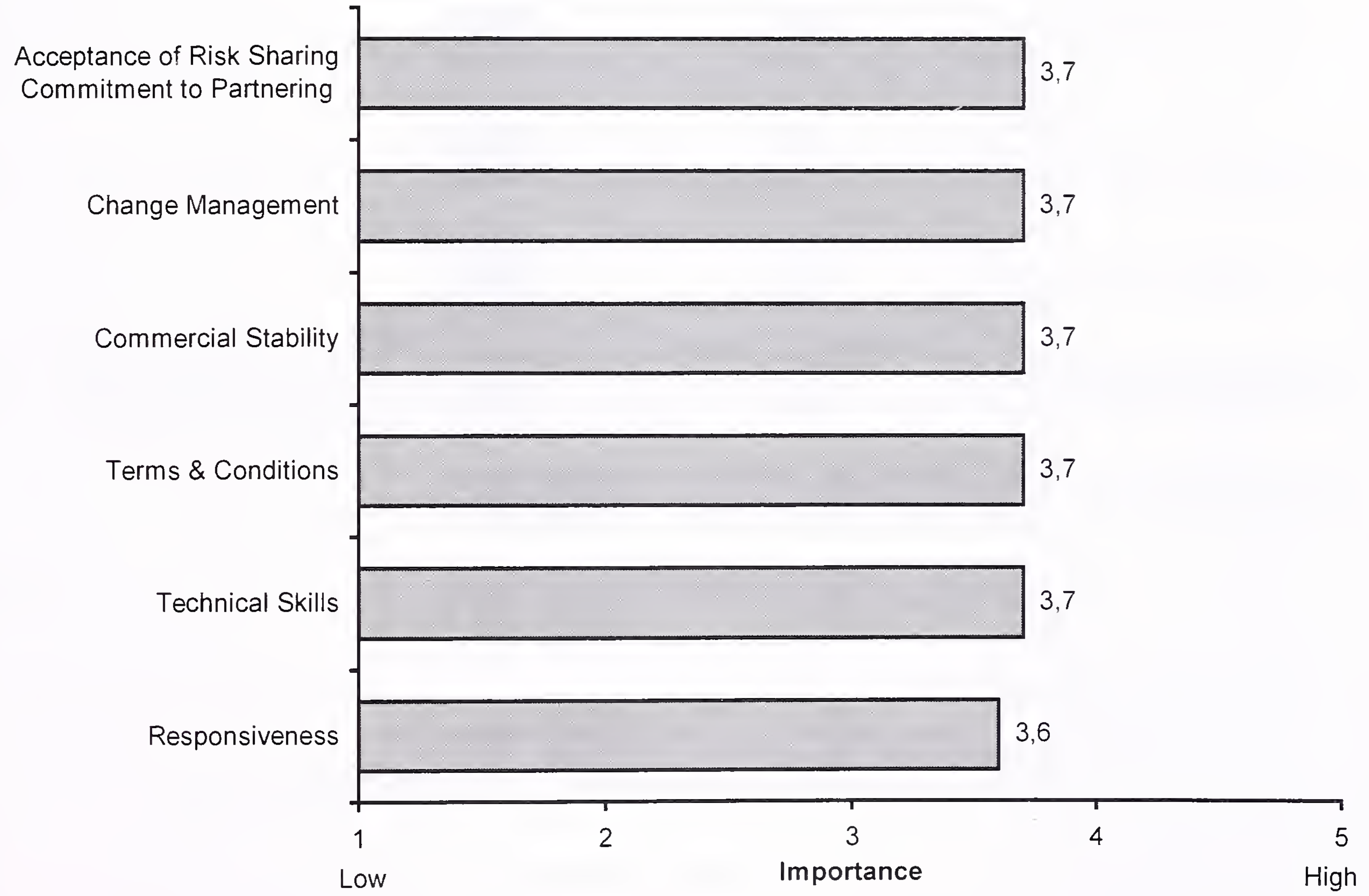
- EDS for billing integration
- Lucent Technologies for systems support
- NCR and Olivetti for systems integration

- Amdahl Trecom for database marketing services
- Perot Systems for outsourcing.

As shown in Exhibit V-37, it is difficult for non-European telecommunications providers to differentiate one vendor selection criteria from another. Northern European organisations already have adopted the same model of selection as U.S. operators: acceptance of risk sharing and/or commitment to partnering and change management capabilities.

Exhibit V-37

Major Reasons for Choosing IT Services Vendors - Non-European Telecommunications Providers 1997



Sample of 7 Telecommunications Providers. Average rating on a scale of 1-5 where 5 is very high importance and 1 is low importance

Source: INPUT

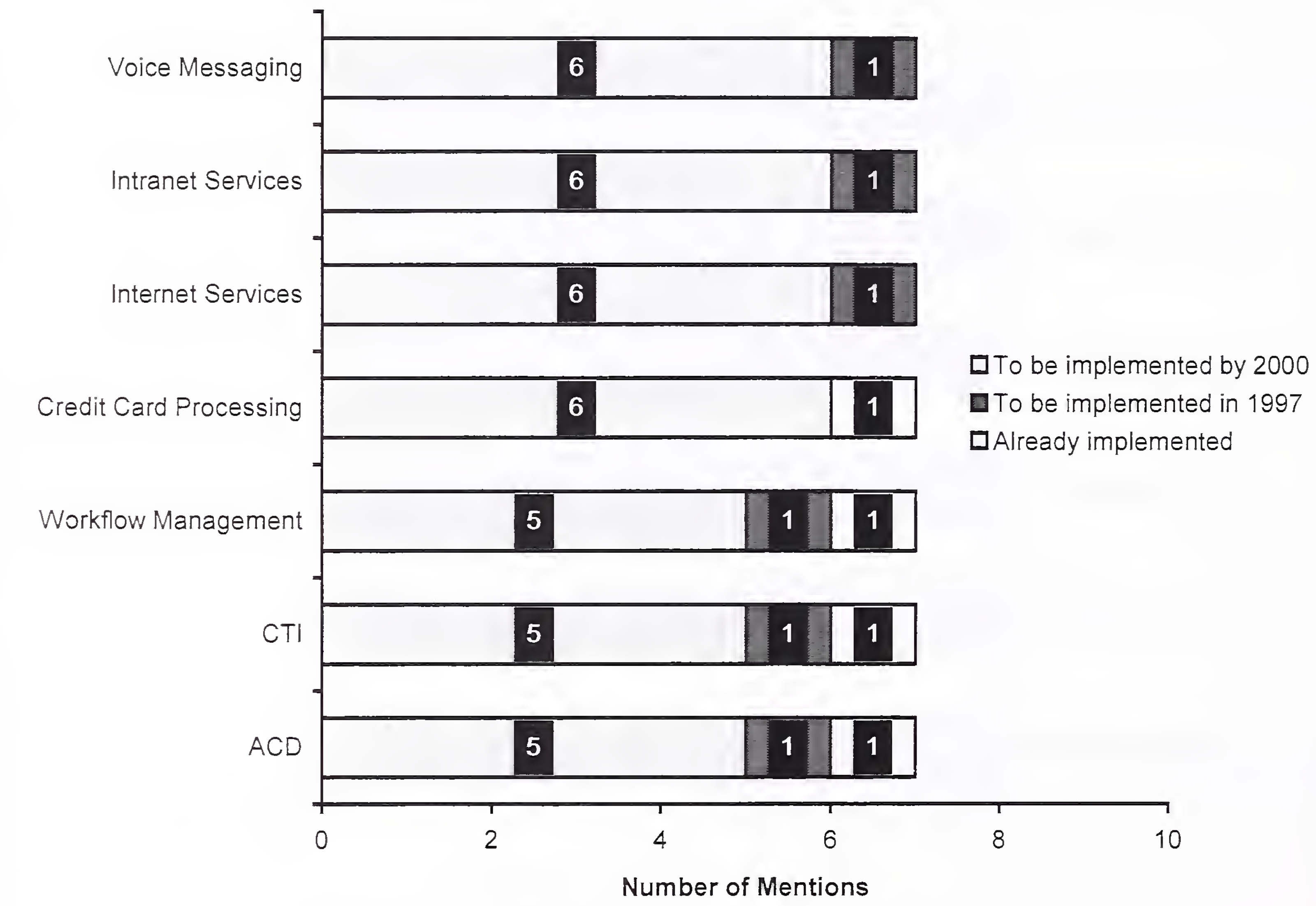
6. Deployment of New Technology

U.S. organisations mention that they need to implement enabling technology and deal with organisational and workforce issues that demand new skills.

Exhibit V-38 presents these operators' current usage of new technologies. Many of them, such as voice telephony, Internet/Intranet services, credit card processing, CTI and ACD, are already implemented in all of the organisations interviewed.

Exhibit V-38

Non-European Telecommunications Services Providers' Current Utilisation of New Technologies 1997



Sample of 7 Telecommunications Providers *Source: INPUT*

A

Questionnaire

The following questions ask you to define the general directions and changes anticipated in your company's use of and need for Customer Care and Billing Solutions.

Q1. Are your company's current Customer Care and Billing Solutions provided separately? Please tick Yes or No.

Yes ❑ No ❑

Q2. Do you believe that Customer Care and Billing should be delivered as two separate solutions or as only one? Please state why?

Single solution ❑ Separate solutions ❑

Why?

____
____
____
____
____
____

Q3. What are the major issues or challenges that your company will face in Customer Care and Billing processes over the next three years? What are the new business processes and applications that will impact Customer Care and Billing in your company? (please provide an example of new applications)

Customer Care:

Billing:

Q4. What objectives do your company want to achieve through implementing Customer Care Services and Billing Services?

Customer Care:

Billing:

Q5. What changes are planned in your use of Information Technology (IT) hardware, software and communications in the next three years in Customer Care and Billing Solutions?

Customer Care:

Hardware

Software

Communications

Billing:

Hardware

Software

Communications

The following questions ask you to quantify and define anticipated changes in more detail..

Q6. Which metrics do you currently use and/or intend to use to evaluate the efficiency of your customer care and billing solutions? How do you expect these metrics to change over the next three years?

Use of IT in	Decrease (%)	Stay the same	Increase (%)
Customer Care			
• Customer calls			
• Managing customer orders			
• Customer information reporting			
• Customer fault management			
• Developing new services			
• Other metric? (please specify)			
Billing			
• Number of bills/invoices produced			
• Improving the billing process			
• Fraud management			
• Other metric? (please specify)			

Q7. Do you intend to implement any of the following applications over the next one to three years?

Service	This year	In 2 to 3 years
Internet services		
Intranet services		
Data mining systems		
Data warehousing systems		
Flexible billing systems		
Voice messaging		
Flexible Customer Management Reporting		
Customer Management Information Systems		
CTI		
Credit Card Processing		
Electronic cash processing		
Video/multimedia		
Workflow management		
CBR Systems		
ACD		
Other (please specify):		

Q8. What impact will market deregulation have on your existing Customer Care and Billing? Please rate on a scale of 1 to 5, where 1 = no impact to 5 = will have significant impact.

Impact
Rating: 1 - 5 ☐
Any comments: ____________________

____

____

____

Q9. Which of the following IT Services do you (or will you) need most to help you implement Customer Care and Billing related services designed to meet your company's objectives? *Please rate your need on a scale of 1 to 5, where 1 = not at all, to 5 = very strongly. Please estimate your expenditure for each product or service.*

If at Q2. you have identified Customer Care and Billing as two separate functions, please complete the table for each function. If you have defined them as a single solution, please ignore the second table and respond under Customer Care only.

- Customer Care - Software and/or Service Product	**Need Rating 1 to 5**		**External Expenditure US$**	
	This year	**2 - 3 years**	**This year**	**2 - 3 years**
Professional services				
Systems integration				
Turnkey systems				
Application software products				
Systems software products				
Network services				
• Network applications				
• Electronic information services				
Outsourcing				
• Systems operations				
• Application management				
• Business operations				
Processing services				
Equipment Services				

- Billing - Software and/or Service Product	Need Rating 1 to 5		External Expenditure US$	
	This year	2 - 3 years	This year	2 - 3 years
Professional services				
Systems integration				
Turnkey systems				
Application software products				
Systems software products				
Network services				
• Network applications				
• Electronic information services				
Outsourcing				
• Systems operations				
• Application management				
• Business operations				
Processing services				
Equipment Services				

Q10. How do you expect to purchase or source your Customer Care and Billing Applications? *Please rate your answer on a scale of 1 to 5, where 1 = not at all to 5 = most likely.*

If at Q2. you have identified Customer Care and Billing as two separate functions, please complete the table for each function.

Source	Single Solution	Separate Solutions	
		Customer Care	Billing
Purchase standard software package			
Tailor standard software package			
Through custom (bespoke) development			
Other: (please specify)			

The following questions relate to selecting and identifying suitable vendors or suppliers for your Customer Care and Billing Solutions.

Q11. Which vendors do you believe are best positioned to provide the solutions you need? (IT applications and/or services for Customer Care and Billing). *Please rate their capabilities on a scale of 1 to 5, where 1 = poor, to 5 = extremely capable.*

If at Q2. you have identified Customer Care and Billing as two separate functions, please complete the table for each function.

Vendor Name	Single Solution	Separate Solutions	
		Customer Care	Billing

Q12. Would you consider an alliance or a partnership with an IT Services vendor to develop or produce a solution to improve your services and capabilities in Customer Care or Billing?

Area	Consider alliance? Yes/No
Customer Care	
Billing	

Q13. If you have entered an alliance with a vendor to help in delivering Customer Care or Billing Services, are you able to say who it is? Are you able to state the scope of the alliance and why you adopted this approach?

We have an alliance with - ______________________

Scope of the alliance - ______________________

____

Reason for alliance - ______________________

____

Q14. Have you used any of the following IT Service vendors for systems development or for integration services? If yes, can you indicate how satisfied you are or were with their services? If you have not used any of the following IT Service organisations, please would you indicate your perception of their capability? *Please rate your answers on a scale of 1 to 5, where 1 = poor, to 5 = extremely capable.*

	Have used		Have not used	
Vendor	**Which IT applications or services**	**Rating 1 to 5**	**Which IT applications or services**	**Perception Rating 1 to 5**
Alcatel				
Alltell Information Services				
Amdocs Inc				
Andersen				
AT&T				
Bell Sygma				
BT				
Bull				
Cap Gemini				
CSC				
debis systemhaus				
Digital				
EDS				
Generic Technology				
HP				
IBM				
ICL				
Kingston-SCL				
Logica				
LHS				
Lucent				
NCR				
Northern Telecom				
Olivetti				
Sema Group				
Siemens				
SNI				
Sun				
Syntegra				
Texas Instruments				
Others: (please specify)				

Q15. In judging which IT Services vendor to select, please rate each of the following criteria on a scale of 1 to 5, where 1 = not important, to 5 = very important.

For your top three criteria, can you name up to three vendors, in priority order, whom you believe would best meet those criteria.

If at Q2. you have identified Customer Care and Billing as two separate functions, please would you complete the table for each function. If as a single solution please complete the rating under the column for Customer Care only.

	Rating 1 - 5		Vendor Name		
Criteria	**Customer Care**	**Billing**	**Vendor One**	**Vendor Two**	**Vendor Three**
Acceptance of risk sharing/commitment to partnering					
Change management					
Commercial stability					
Global capability					
Innovation in contracting					
Process knowledge					
Quality of software product or services					
Responsiveness					
Technical skills					
Terms and conditions					
Others: (please specify)					

Q16. How much do you expect to spend annually with an external IT Services vendor on systems development or integration for Customer Care and Billing projects? Please state what proportion this is of your overall IT budget. Over the last year, has your proportion of overall IT spend on external development or integration services increased, decreased or remained the same?

Function	Annual spend US$	Proportion of total IT budget	Increased %	Decreased %	Same
Customer Care					
Billing					

The following questions relate to your company and its operations

Q17. In what geographic areas of the world does your company have offices or provide telecommunications services?

Are you able to state the annual turnover of your company in each of the world regions outlined below?

Geographic area	Has offices Yes or No	Provides services Yes or No	Annual turnover US$M
National only			
Western Europe			
Eastern Europe			
N. America			
S. America			
Asia			
Africa			
Australasia			
Pacific Rim			

Q18. Please tick the services and products offered by your company.

Services/Products offered	Nationally	Globally
Voice Telephony		
Paging		
Calling card services		
ISDN		
IN		
VPN		
Centrex		
ATM		
LAN Interconnect		
Frame Relay		
Mobile telephony		
Mobile data, fax, etc.		
Video conferencing		
Cable TV services		
Video on demand		
Internet services		
Satellite services - VSAT		
Other: (please specify)		

Q19. In which vertical sector are your company's major clients? Please estimate, if you are able, for each sector below, as a percentage of your total turnover.

Sector	Percentage of your turnover
1. Commercial/Business Market	
Discrete Manufacturing	
Process Manufacturing	
Transportation	
Utilities	
Retail and Wholesale Trade	
Banking & Finance	
Insurance	
Health Services	
Education	
Business Services	
Central or Federal Government	
State or Local Government	
Entertainment Industries	
Miscellaneous Industries	
2. Domestic Market	

Q20. For the Commercial/Business Market (see Q19 above), can you estimate the size of your client companies as a percentage of your total turnover?

Client company turnover	Percentage of your turnover
Under $99 million	
$100 - $499 million	
$500 - $999 million	
$1 000 - $3 999 million	
$4 000 - $19 000 million	
$20 000 - $39 000 million	
Over $40 000 million	

Q21. Can you provide an example of your company's current most innovative offering based on existing Customer Care and Billing Solutions?

Customer Care:

____

____

____

____

Billing:

____

____

____

____

Thank you very much for your time and assistance with this questionnaire

B

Index

C

Exchange Rates

Exhibit C-1

U.S. Dollar and ECU Exchange Rates 1996

Country	Currency	US Dollar	ECU
Europe	$	1	0.781
France	FF	4.89	6.27
Germany	DM	1.43	1.83
United Kingdom	PS	0.644	0.825
Italy	Lira (K)	1.59	2.03
Sweden	Sek	6.63	8.49
Denmark	DK	5.54	7.10
Norway	NK	6.32	8.09
Finland	FM	4.34	5.33
Netherlands	Dfl	1.6	2.05
Belgium	BF	29.4	37.70
Switzerland	SF	1.15	1.47
Austria	Sch	10.1	12.40
Spain	Ptas	121	155.00
Ireland	IP	0.624	0.800
Portugal	Esc	149	191.00
Greece	Dra	237	291.00
Eastern Europe	$	1	0.781

Source: Financial Times January 1996

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